

# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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LONDON, SATURDAY, SEPTEMBER 6, 1884.

[SUPPLEMENT.] PRICE SIXPENCE.  
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10s.	10s.	10 Rio Tinto, £16 5s.
10s.	100 Hoover Hill, 4s. 6d.	25 Ruby (New), 16s. 6d.
10s.	50 Home Mines Trust,	25 Richmond, £3 13s. 6d.
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10s.	100 Java, 2s. 6d.	90 Spitzkop.
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10s.	25 Killifreth, 7s.	20 So. Condurow, £3 1/2
10s.	50 Kongsberg,	50 South Darren, 4s. 9d.
10s.	50 La Plata (New), 5s. 3	80 South Devon Uni., 3s
10s.	150 Last Chance, 1s. 6d.	100 So. Penarth, 1s. 6
10s.	25 Leadhills, £1 14s. 6d.	50 Tarnbrachery, 3s. 9d.
10s.	80 Lisbon-Berlyn, 10s.	25 Tolima A, £7 1/2
10s.	25 Marke Valley, 13s.	10 ditto B, £6
10s.	75 Michipicoten,	50 Transvaal Gold, 21s.
10s.	30 Mona,	80 Trevaunance, 27s.
10s.	30 Montana, 21s. 6d.	80 Trevaunance, 27s.
10s.	30 Mounts Hay, 3s.	30 Unl. Mexican, £3 3 9
10s.	50 Myre Gold, 10s. 6d.	70 Victoria Gold, 5s.
10s.	10 New Caradon,	10 Wheel Agar, £17
10s.	12s. New Callao, 2s. 9d.	10 Wheel Basset, £2 18 9
10s.	30 New Emma, 13s. 6d.	150 West Callao, 2s. 9d.
10s.	15 New Quebrada, £3 1/2	20 West Phoenix.
10s.	25 New Kitty, 23s. 9d.	100 West Caradon.
10s.	150 Nouveau Monde, 2s.	30 West Crebtor, 1s.
10s.	50 New W. Caradon,	50 West Polbreon.
10s.	60 Old Shepherds, 10s.	10 West Kitty, £10 1/2
10s.	50 Organos, 14s.	100 Wheel Coates, 2s. 6d.
10s.	100 Orita, 22s.	20 Wh. Crebtor, £1 8s. 9
10s.	60 Oscar, 10s. paid, 15s.	80 Wheel Jane.
10s.	100 Potosi (New), 8s.	30 Wheel Kitty.
10s.	50 Fort Phillip, 2s. 3d.	50 Wheel Silver & Lan-
10s.	75 Parys Copper, 1s. 6d.	80 Wynad Perser., 1s. 6
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Callao Bis, 7s. 3d.	150 Ind. Consolidated, 2s.	50 Port Phillip, 2s.
Callao Bis, 7s. 3d.	20 Killifreth.	20 Panulicillo, £3 14s.
Callao Bis, 7s. 3d.	50 Kapanga, 3s. 3d.	25 Ruby, 16s. 1
Callao Bis, 7s. 3d.	20 Leadhills.	15 Richmond, £3 13s. 9d.
Callao Bis, 7s. 3d.	100 La Plata, 5s.	10 Schwab's Gully, £2 1/2
Callao Bis, 7s. 3d.	60 Lisbon-Berlyn, 10s. 3d.	50 South Caradon, 15s. 3d.
Callao Bis, 7s. 3d.	40 Marke Valley, 12s. 6d.	15 South Condurow.
Callao Bis, 7s. 3d.	50 Myre Gold, 11s. 3d.	100 Transvaal Gold, 20s.
Callao Bis, 7s. 3d.	100 Montana, 40s. 6d.	20 Unl. Mexican, £3 3 9
Callao Bis, 7s. 3d.	150 Nouveau Monde, 2s. 3	15 West Kitty.
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20 Bratsberg, 25s. 9d.	30 Home Mines Trust,	50 Rhodes Reef.
50 Carn Camborne,	17s. 9d.	10 Richmond, £2 1/2
50 Callao Bis, 7s.	50 Indian Consolidated,	10 Roman Gravels, £2 1/2
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60 Consolidated.	20 La Plata (New), 5s.	20 South Kitt, 11s. 3d.
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50 Chontales, 4s.	20 Lisbon-Berlyn, 11s.	10 Tolima A, £7 1/2
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Copper, 1s. 9d.	50 Myre Gold,	20 Transvaal Gold, 20s. 9
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50 Devon Friendship, 2s.	30 New Kitty.	20 Victoria Gold.
40 Duchy Peru.	80 Nouveau Monde, 2s. 3	7 Wheel Agar, £17 1/2
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15 Ecton, 20s.	20 Oscar, 15s.	75 West Polbreon, 10s.
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100 Callao Bis, 7s. 3d.	50 Kongsberg.	60 Victoria, 5s.
100 Callao Bis, 7s. 3d.	60 Myre Gold, 11s. 3d.	60 West Callao, 3s.
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that of West Kitty, and the property promises to be of a very high order. Mr.

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30 Bird		



# BRITISH ASSOCIATION FOR ADVANCEMENT OF SCIENCE. THE MONTREAL MEETING.

The great Canadian meeting has now concluded, and although the number of members was smaller than on some previous occasions, it will probably be classed as one of the most successful meetings ever held. Nearly 1800 attended, and to judge from the telegraphic accounts, and addresses, and abstracts with which the Press were favoured in advance, the papers read were of more than usual interest and of high character. The papers of Prof. T. Rupert Jones, "On the Geology of South Africa;" of Prof. Chandler Roberts, "On the Diffusion of Metals;" of Dr. C. Le Neve Foster, "On the Relative Dangers of Coal and Metal Mining;" and many others are of a class to demand detailed notice as soon as they are obtainable. In all the sections both addresses and papers seem to have been listened to with much attention and fully discussed. Altogether the Montreal meeting is calculated to secure a mutual interchange of views and of knowledge which will be of much advantage to both Canada and England. The permanent remembrance of the meeting will be preserved by the "British Association Gold Medal," which will henceforth rank amongst the prizes at McGill University, with which many of the members of the British Association now be connected, since at a commemorative meeting of the McGill University it was decided to confer degrees on Lord Rayleigh, the Marquis of Lansdowne, Sir John Macdonald, Sir Lyon Playfair, Sir William Thomson, Prof. Bonney, Prof. Frankland, Capt. Galton, Mr. Harcourt, Sir Henry Roscoe, Mr. Blanford, Mr. Mosley, Gen. Lefroy, Sir Richard Temple, Sir Frederick Bramwell, Dr. E. B. Tylor, Prof. Asa Gray, of Harvard University, and Mr. James Hall, of New York.

## MATHEMATICS AND PHYSICS SECTION.

Among the more generally interesting papers included in the programme for this section were those "On Certain Practical Applications of a New Mechanical Principle," by Prof. Hele Shaw; "On a New Cylindrical Slide Rule," by Mr. E. Thatcher; "On the Analogy between Heat and Electricity," by Prof. Fitzgerald; "On the Law regulating the Connection between the Current and the Intensity of Incandescence of Carbon Filaments in Glow Lamps," by Mr. W. H. Preece; "On an Electrical Control for Equatorial Driving Clocks, and on Polishing Specula," by Lord Rosse; on the Importance of Tidal Observations in the Gulf of St. Lawrence and the adjacent Atlantic Coasts," by Prof. Johnson; "On Recent Progress in Photographing the Solar Spectrum," by Prof. Rowland; "On a New Form of Induction Chronometer," by Prof. C. Carpmel; and "On Whirlwinds and Waterspouts," by Prof. James Thomson. The Committee on Tidal Observations in the English Channel reported that the tidal curves of the self-registering tide gauge at Dover for the years 1880, 1881, 1882, and 1883 have been kindly placed at their disposal by the Board of Trade for reduction and tabulation; and that the Belgian Government had been good enough to present to the committee copies of the tidal curves at Ostend during the same period of four years. The reduction and tabulation of the high and low water registers of these two sets of tidal curves has progressed satisfactorily, and will be shortly completed. It is hoped also that a like reduction will be soon commenced with other self-registering tidal curves during the same period at several other points, both on the English and the French coasts.

## CHEMISTRY SECTION.

Although many of the papers entered for this section are necessarily of so technical a character as to be unattractive to the general reader, there were many of considerable interest. Dr. Perkin would, of course, deal with "Coal Tar Colouring Matters" in an entertaining manner; and the same may be said of Mr. Walter Weldon "On the Manufacture of Soda and Chlorine"; but the chief feature would be Prof. Roscoe's paper "On the Diamond Deposits of South Africa." In it he describes the geological and physical aspects of the diamond-bearing deposits at Kimberley and elsewhere, and states the chemical and physical composition of those rocks. The most interesting portion of the paper, however, is the announcement of the discovery in the so-called diamond earth of a volatile crystalline hydro-carbon soluble in ether, which seems to confirm the hypothesis that carboniferous shales which are penetrated by diamond-bearing pipes have been the source of the carbon which we now find in the crystalline state of diamonds. The paper concludes with a description of the physical structure of the ashes or incombustible portion of the diamond, which is of a very singular character. It has hitherto not been examined, but may probably throw light on the important question of the mode of formation of the diamond. The reports of the Spectrum Analyses Committee, and of the Committee on Chemical Nomenclature were prepared for presentation, and among the other papers of general interest may be mentioned those "On the Production of Permanent Gas from Paraffin Oils," by Prof. S. Macadam; and "On the Chemistry of Natural Silicates," by Prof. T. Sterry Hunt.

## GEOLOGICAL SECTION.

The address of the President of the Geological Section, Mr. W. T. BLANDFORD, A.R.S.M., F.R.S., was at once attractive and instructive. He remarked, and perhaps with truth, that there were some present who would have been able from their knowledge of European and American geology to deal more fully with a comparison of geological phenomena on opposite sides of the Atlantic Ocean; but the wide experience which Mr. Blandford has had both in Europe and in India admirably fitted him for the honourable post he was called upon to occupy, and there can be no doubt that his occupancy of the Presidential chair was calculated to give greater satisfaction to Canadians and Americans than could have been expected had he been replaced by any of those to whom his remark applied. My own experience, said Mr. Blandford, has been chiefly derived from the distant continent of Asia, and I have not that intimate acquaintance with the geology of Europe, nor that knowledge of the progress of geological research in America which would justify my entering upon any comparison of the two continents. It has, however, occurred to me that among the questions of wide importance connected with the correlation of strata in distant parts of the world there is one to which some interesting contributions have been made by the work of the Geological Survey of India, and by the geologists of Australia and South Africa; and that a short time might be profitably devoted to a consideration of a few remarkable exceptions to the rule that similarity of faunas and floras in fossiliferous formations throughout the surface of the world implies identity of geological age. It has probably occurred to other geologists here present, as it has to myself, to be engaged in examining a country the geology of which was absolutely unknown, and to feel the satisfaction that attends the first discovery of a characteristic fossil form. A clue is at once afforded to the geology of the region; one horizon at least is believed to be determined; and from this horizon it is possible to work upwards and downwards until others are found. It is, therefore, of especial importance to those engaged in geological exploration to satisfy themselves whether the conclusion is correct that identity, or close specific similarity, among fossil forms is a proof that the beds containing them are of the same geological age. It has been pointed out by some of the most careful thinkers, and especially by Forbes and Huxley, that a species requires time to spread from one area to another, that, in numerous cases, a migratory specific form must flourish in the region to which it has migrated, after it has died out in its original birthplace; and that the presence of the same species in two deposits at distant localities may rather tend to indicate that both were not formed simultaneously. Huxley, as is well known, invented the term "homotaxis" to express the relations between such beds, and to avoid the possibly misleading expressions "geological synchronism" and "contemporaneous origin." Despite such cautions, however, it still appears to be generally assumed by paleontologists that similarity between faunas and floras is evidence of their belonging to the same geological period; that the geological age of any formation, whether marine, fresh water, or subaerial, can be determined by a comparison of its organic remains with those of other deposits, no matter how distant, of which the position in the geological sequence is ascertained; in short, that homotaxis of marine, fresh water, and terrestrial forms implies geological synchronism. That, as a general rule, homotaxis affords evidence that beds ex-

ting it belong approximately to the same geological period appears supported by a large amount of evidence.

But there are some startling exceptions. I propose to notice a few typical instances, several of them Indian, in which the system of determining the age of various formations by the fauna or flora has led to contradictory results, before attempting to show wherein the source of the error appears to lie. Nothing would be gained, and much time would be lost by entering upon the details of all the cases known, even if I were able to give authentic particulars, which is doubtful. It will be sufficient to cite some characteristic examples, concerning the details of which satisfactory evidence is forthcoming. There are but few fossiliferous deposits on the face of the earth that have attracted more attention than the Pliocene beds of Greece. In one of the most classical and famous sites of the world, a few miles east of Athens, some red, silty beds occur, abounding in vertebrate remains. Some of the bones were described by Wagner and others, but for a complete account of the fauna we are indebted to Prof. Albert Gaudry, who has himself collected by far the greater portion of the remains hitherto procured. Of mammalia alone there are known from this deposit 31 genera, of which 22 are extinct, and 35 species. Now, this fauna is almost invariably in European works quoted as Miocene. Of the species found no less than 14 are met with in other European deposits assigned to the Miocene period. It is true that one of these deposits at least—that of Eppelsheim—has been shown on stratigraphical grounds to be much more probably Pliocene than Miocene, and the position of other deposits has been determined by the kind of argument which, as I shall show, has proved misleading in the case of Pliocene itself. Professor Gaudry especially points out that the vertebrate remains, supposed to be those of Miocene animals, are deposited in a stratum overlying a marine bed of undoubted Pliocene age, and he proposes the following hypothesis to account for the presence of Miocene fossils in a Pliocene stratum. The remains found at Pliocene, he thinks, those of animals that inhabited the extensive plains which in Miocene times extended over a considerable proportion of the area now occupied by the Eastern Mediterranean, and which united Greece to Asia; the plains were broken up by the dislocations that took place at the close of the Miocene period, and the animals escaped to the mountains, where they died for want of space and of food. Their bones were subsequently washed down by the streams from the hills, and buried in the Pliocene deposits of Pliocene. Professor Gaudry evidently has no very profound faith in this hypothesis, and it is unnecessary to refute it at length. One fact is sufficient to show that it is untenable. However sudden may have been the cataclysm that is supposed to have broken up the Miocene plains of Attica, a very long period, measured in years, must have elapsed before the Pliocene marine fauna could have established itself. Now, the bones of mammals exposed on the surface decay rapidly; the teeth break up, the bones become brittle. It is doubtful if bones that had been exposed for only five or six years would be washed down by a stream without being broken into fragments; the teeth, especially, would split to pieces. The condition of the Pliocene fossils proves, I think, that they must have been buried very soon after the animals died, that they were not exposed on the surface for any length of time, and that they could not have been washed out of an earlier formation, and it appears incredible to me that the Pliocene mammals were not contemporary with the Pliocene mollusca that occur in the same beds. In short, I cannot but conclude that the Pliocene mammals were Pliocene, and not Miocene.

Mr. Blanford's observations must have been particularly gratifying to friends of the late Rev. W. B. Clarke, of Sydney, New South Wales, who constantly contended, though the accuracy of his conclusions were disputed by many in this country, that the Australian coals were of true carboniferous age, although the fossils found with them were not identical with those occurring in similar positions in other countries. Mr. Blanford demonstrated that it is quite unsafe to conclude as to the age of the formations and their relation to European formations, from the land animals and plants found in them alone, and how necessary it is to consider the evidence afforded by marine organisms. He pointed out that in the case of the lower coal measures of Australia, the conflict is between the evidence of the marine and terrestrial organisms. Manifestly one or the other of these leads to erroneous conclusions. The general opinion of geologists is in favour of accepting the evidence of marine organisms. The reason is not far to seek. So far as I am aware no case is known where such an anomaly as that displayed in the Gondwanas of India has been detected among marine formations of which the sequence was unquestioned. In the Gondwanas we have a Rhaetic flora overlying a Jurassic flora, and a triassic fauna above both. In Australia we find a Jurassic flora associated with a carboniferous marine fauna, and overlaid by a perianth fresh-water fauna. The only similar case among marine strata is that of the well-known colonies of the late M. Barrande, in Bohemia, and in this instance the intercalation of strata containing later forms among beds with older types is disputed, while the difference in age between the faunas represented is not to be compared to that between triassic and Jurassic. There is, however, another and an even stronger reason for accepting the evidence of marine instead of that afforded by terrestrial and fresh-water animals and plants. If we compare the distribution of the two at the present day we shall find a very striking difference, and it is possible that this difference may afford a clue to the conditions that prevailed in past times.

Wanderers, continued Mr. Blanford, into what they fancy unexplored tracts in paleontology, are very likely to find Professor Huxley's foot-prints on the path they are following. I have had occasion to turn to a paper of his on Hyperodapedon, of which the remains occur both in Great Britain and in India, and I find the following remarks, which appear so exactly to express a portion of the view to which I wish to call your attention, that I trust I may be excused for quoting them. Professor Huxley writes:—"It does not appear to me that there is any necessary relation between the fauna of a given land and that of the seas of its shores. The land-fauna of Britain and Japan are wonderfully similar; their marine faunas are in several ways different. Identical marine shells are collected on the Mozambique coast and in the easternmost islands of the Pacific, while the faunas of the lands which lie within the same range of longitude are extraordinarily different. What now happens geographically to provinces in space is good evidence as to what, in former times, may have happened to provinces in time, and an essentially identical land fauna may have been contemporary with several successive marine faunas. At present our knowledge of the terrestrial fauna of past epochs is so slight that no practical difficulty arises from using, as we do, sea-reckoning for land time. But I think it highly probable that sooner or later the inhabitants of the land will be found to have a history of their own." When these words were written, more than 24 years ago, scarcely one of the geological details to which I have called your attention was known. I need not point out how wonderful a commentary such details have afforded to Professor Huxley's views. I have no desire to quote authority. I fear that in the facts I have been laying before you my quotations of the most authoritative writers have been made less for the purpose of showing reverence than of expressing scepticism. My reason for calling attention to Professor Huxley's views is different. I entirely agree with them; but there is, I think, something to be added to them. There is, I believe, an additional distinction between land and marine faunas that requires notice, and this distinction is one of very great importance and interest. It appears to me that at the present day the difference between the land faunas of different parts of the world is so vastly greater than that between the marine faunas that if both were found fossilised, while there would be but little difficulty in recognising different marine deposits as of like age from their organic remains, terrestrial and fresh-water beds would in all probability be referred to widely different epochs, and that some would be more probably classed with those of a past period than with others of the present time.

It is scarcely necessary to remind you of the proofs already accumulated of differences between the fauna of distant countries in tertiary times. The Eocene, Miocene, and Pliocene vertebrata of North America differ quite as much from those of Europe in the same periods as do the genera of the present day, and there was as much distinction between the mammalia of the Himalayas and of

Greece when the Siwalik and Pliocene faunas were living as there now. In Mesozoic times we have similar evidence. The reptiles of the American Jurassic deposits present wide differences from those of the European beds of that age, and the South African reptiles of the Karoo beds are barely represented elsewhere. But it is no reason for supposing that the limits or relations of the geological and botanical regions in past times were the same as they are. It is quite certain, indeed, that the distribution of land and whether the great oceanic tract has remained unchanged in its general outlines or not, has undergone enormous variations, and the migration of the terrestrial fauna and flora must have depended on the presence or absence of land communications between different continental tracts; in other words, the terrestrial regions of different epochs, although just as clearly marked as those of the present day, were very differently distributed. The remarkable resemblance of the floras in the Karoo beds of South Africa, the Karoo muds of India, and the coal measures of Australia, and the difference of all from any European fossil flora, is a good example of the former distribution of life; whilst it is scarcely necessary to observe that the present Neotropical and Australian mammalia more than they do the living mammalia of other regions, and that the Australian mammal fauna is in all probability more nearly adapted to the forms of life inhabiting Europe in the Mesozoic era than any European types of later date. If the existing mammalia of Australia had all become extinct, a deposit containing their remains would probably have been classed as Mesozoic. The belief in the former universality of faunas and floras is very much connected with the idea once generally prevalent, and still far from obsolete, that the temperature of the earth's surface was formerly uniform, and that, at all events, until early or even middle tertiary times, the poles were as warm as the equator, and both enjoyed a constant tropical climate. The want of glacial evidence from past times in Spitzbergen and Greenland, where a temperature capable of supporting arboreal vegetation has certainly prevailed during several geological periods, is counterbalanced by the gradually accumulating proofs of lower Mesozoic or upper Palaeozoic glacial epochs in South Africa, Australia, and, strangest of all, in India. Even during the periods of the earth's history, when there is reason to believe that the temperature in high latitudes was higher than it now is, evidence of distinct zones of climate have been observed; and quite recently Dr. Neumayr, of Vienna, has shown that the distribution of Mesozoic and Jurassic cephalopoda throughout the earth's surface proves that during those periods the warmer and cooler zones of the world existed in the same manner as at present, and that the affected the distribution of marine life as they do now.

The idea that marine and terrestrial faunas and floras were similar throughout the world's surface in past times is so ingrained in paleontological science that it will require many years yet before the fallacy of the assumption is generally admitted. No circumstance has contributed more widely to the belief than the supposed universality of diffusion of the carboniferous flora. The evidence that the plants which prevailed in the coal measures of Europe were replaced by totally different forms in Australia, despite the closest similarity of the marine inhabitants of the two areas at the period, will probably go far to give the death blow to a hypothesis that rests upon no solid ground of observation. In a vast number of instances it has been assumed that similarity between fossil terrestrial faunas and floras proves identity of geological age, and, by arguing in a vicious circle, the occurrence of similar types assumed without sufficient proof to belong to the same geological period has been alleged as evidence of the existence of similar forms in distant countries at the same time. In the preceding remarks it may perhaps have surprised some of my auditory that I have scarcely alluded to any American formations, and especially that I have not mentioned so well known and interesting a case of conflicting paleontological evidence as that of the Laramie group. My reason is simply that there are probably many here who are personally acquainted with the geology of the American Cretaceous and tertiary beds, and who are far better able to judge than I am of the evidence as a whole. To all who are studying such questions in America I think it will be more useful to give the details of similar geological puzzles from the Eastern Hemisphere than to attempt an imperfect analysis of difficult problems in the great Western continent. Perhaps it may be useful, considering the length to which this address has extended, to recapitulate the principal facts I have endeavoured to bring before you. These are:—1. That the geological age assigned on homotaxial grounds to the Pliocene and Siwalik mammalian faunas is inconsistent with the evidence afforded by the associated marine deposits.—2. The age similarly assigned on the same data to the different series of the Gondwana system of India is a mass of contradictions; beds with a triassic flora overlying others with Rhaetic or Jurassic floras.—3. The geological position assigned on similar evidence to certain Australian beds is equally contradictory, a Jurassic flora being of the same age as a carboniferous marine fauna.—4. The same is probably the case with the terrestrial and fresh water faunas and floras of South Africa.—5. In instances of conflicting evidence between terrestrial or fresh water faunas and floras on the one side, and marine faunas on the other, the geological age indicated by the latter is probably correct, because the contradictions which prevail between the evidence afforded by successive terrestrial and fresh water beds are unknown in marine deposits, because the succession of terrestrial animals and plants in time has been different from the succession of marine life, and because in all past times the differences between the faunas and floras of distant lands have probably been, as they now are, vastly greater than the differences between the animals and plants inhabiting the different seas and oceans.—6. The geological age attributed to fossil terrestrial faunas and floras in distant countries on account of the relations of such faunas and floras to those found in European beds has proved erroneous in so large a number of cases that no similar determinations should be accepted unless accompanied by evidence from marine beds. It is probable in many cases—perhaps in the majority—where the age of beds has been determined solely by the comparison of land or fresh water animals or plants with those found in distant parts of the globe, that such determinations are incorrect.

One of the most attractive papers in this section is beyond question that of Prof. T. G. BONNEY, "On the Archean Rocks of Great Britain," in which he carefully gives the mineral characters of the Archean rocks in each district noticed, and the relations in which they stand to those of ascertained geologic age. Prof. Bonney then proceeds to review the various rocks which have been classed as Archean in Cornwall, South Devon, the Malvern Hills, the Wrekin district, the Lickey Hills, the Hartshill Ridge, Charnwood Forest, in England. He then proceeds to Wales and to Scotland, taking each series of rocks included in his field of review, and endeavouring to locate it with regard to character and age. He considers that the Canadian Laurentian closely resemble the oldest gneisses of North-West Scotland, the Central Highlands, and some other places in Britain; and that the typical Huronian represent the later Cambrian rocks of Wales, but that schists which in Britain helped to fill up the gap between these appeared rare in Canada. Prof. JAMES HALL read a paper "On the Lamellibranchiate Fauna of the American Devonian Groups;" and there were also papers by Dr. STERRY HUNT, "On the Eozoic Rocks of North America;" Professor BLAKE, "On First Impressions of some Canadian pre-Cambrian Rocks;" and by Dr. H. J. LAVIS, "On a Geological Map of Monte Somma and Vesuvius."

In a report on the National Geological Surveys of Europe, Mr. W. TOPLEY explains the organisation and publications of the chief geological surveys in Europe. Some interesting results come out from this investigation as regards the relative amount of work done by private and official geologists. In England the foundations of the survey, and, in fact, of all detailed field geology, were laid by private workers, and a very large proportion of English geological literature has always come from them. On the Continent this has rarely been so; nearly all the surveys are directly due to the Government, and much of the geological literature comes from those connected with the surveys, or from official mining engineers. There, also, many professors of geology are connected with the surveys; this is not now the case in England, although many of its professors have



time served on the staff. In fact, at the present time the Geological Survey and Cambridge University almost divide between them the active teaching power of geology in England. The publications of the English Survey are confined to questions relating to its work progress, but this is not always the case abroad. The staffs of the Austrian and Prussian Surveys have always been active in work on the geology of districts outside their own special areas, which by no means small, and the results are given in the official publications of those surveys. The historical sketch of the British Geological Survey is very interesting. The founder of this Survey was Henry de la Beche, who before 1832 had coloured geologically on a small grant was made by the Government towards the cost of publishing these maps by the Ordnance Survey, but De la Beche contributed money for the purpose. Subsequently De la Beche was appointed to make a geological survey, under the direction of Gen. Colby, then the head of the Ordnance Survey. The result of this was the publication of the "Report on the Geology of Devon, Cornwall, and West Somerset," 1839, with the 1-in. maps of the district. About 1832 other geologists were surveying various districts upon the 1-in. maps of the Ordnance Survey—William Smith in many parts, W. Loasdale near Bath, H. Maclauchlan and R. Wright, both of the Ordnance Survey, the Forest of Dean and Ludlow respectively, W. Logan in South Wales. Some of this information, notably Logan's, was incorporated in the official geological maps. In 1845, the Geological Survey was detached from the Ordnance Survey and was placed under the office of Woods and Forests; in 1854 it became a branch of the Department of Science and Art. From about the year 1832 some officers of the Ordnance Survey in the North of Ireland collected geological information, which was collected and published by Captain J. E. Portlock in 1845. The geological survey of Ireland was commenced in 1845, by Captain H. James as director, the subsequent directors being Oldham in 1845; J. B. Jukes, 1850; E. Hull, 1859. The survey of Scotland was commenced in 1854, and was made a distinct branch of the geological survey in 1867, with Arch. Geikie as director, succeeded in 1882 by H. H. Howells. England, the original home of the survey, was presided over by De la Beche as director till 1845, when G. Ramsay became director. He was succeeded in 1872 by H. W. H. Wood, now the senior director. The dates of appointment of the directors-general are—H. de la Beche, 1845; Sir R. J. Murchison, 1845; A. C. Ramsay, 1872; Arch. Geikie, 1881. Until 1845 the survey was known as that of Great Britain; when the survey of Ireland was commenced, the original name was confined to that of Great Britain proper, the entire survey being called that of the United Kingdom. In 1877 the title of Great Britain was discontinued entirely, this survey being divided into those of England and Wales and Scotland. The total number of the staff of the Geological Survey is now 57, distributed as follows:—One director-general, three directors, three district surveyors, 14 geologists, 25 assistant-geologists, four naturalists and paleontologists, four fossil collectors, and general assistants.

"The Mode of Occurrence of Precious Stones and Metals in India" as described in a paper by Prof. VALENTINE BALL, who said that fully 3000 years India has been known as the source of precious stones and metals, but scarcely 200 years have elapsed since other countries yielding precious stones have entered into competition with it; and it is only within the present century that she has ceased to hold a pre-eminent position as a supplier of the markets of the world. In order to arrive at a full and satisfactory elucidation of this subject two branches of enquiry must be undertaken, one based upon what has been actually ascertained by careful geological exploration of the country, and the other upon such historical records as are available of the former production of the minerals in question, and the indications of the sites where they were mined. In this paper will not be necessary or suitable to enter at length into details. The author's object is rather to direct attention to the subject generally, and to make known the fact that much has been accomplished in late years which has not as yet found its way into manuals and encyclopedias. Most of the information to be found in such works is far behind our present knowledge; and, where not actually incorrect, has been superseded by fuller and more accurate observations. The question—What is a Mineral Vein or Lode? was discussed in a paper by Dr. C. LE NEVE FOSTER, who quoted briefly the definitions of a mineral vein given by Werner, Carne, Von Cotta, Grimm, Von Moedek, Geikie, Sandberger, and Serlo, who, in common with most geologists, have looked upon mineral veins as "the contents of fissures." While admitting that a very large number of veins may be described, the author contended that the exceptions are sufficiently important and numerous to warrant a change in the definition. He is of opinion that many of the principal and most productive lodes in Cornwall are simply tabular masses of altered granite adjacent to fissures; and he brought forward the opinions of other geologists to show that certain veins in the English Lake District, the Tyrol, Nova Scotia Nevada, Colorado, California, and Australia are not filled up fissures. In conclusion, he proposed the following definition:—"A mineral vein or lode is a tabular mineral mass formed, more or less entirely, subsequently to the enclosing rocks."

#### BIRMINGHAM AND MIDLAND INSTITUTE.

The series of annual excursions was brought to a successful close Aug. 30 by a visit of the archaeological section of the members to Stoneleigh and Kenilworth. Stoneleigh Church, beautifully situated on the River Sow, was first examined. It is composed of parts of many periods extending from the 12th to the 19th centuries. Of the earliest, or Norman period, there yet exists enough to show that here was once a small but very beautiful Norman church, with nave, double chancel, and western tower. Of this early structure there remains a very fine north doorway, on the tympanum of the arch of which are sculptured two rudely designed lions. A small part of the Norman tower also remains, and the piers of what is possibly a fine arch between the tower and the nave, but now hidden by a gallery. The chancel is a remarkably rich specimen of the architecture of the 12th century, the shafted piers and the several rings of the arch being profusely enriched with the chevron, billet, and other characteristic Norman ornaments. The oldest monument in the church is that of a priest—probably of the 14th century—whose recumbent effigy is now just within the chancel arch. On each side of the chancel are modern mortuary chapels, and on the south side of the chancel a beautifully designed and executed altar tomb in alabaster, within a groined recess, has recently been erected. On the north side of the chancel is a very large and costly monument of black and white marble, with effigies of Lady Alicia Dudley, daughter of Sir Thomas Leigh, 1663, and of Alicia Duchess Dudley, A.D. 1621. This is figured in Dugdale's History of Warwickshire. The extremely curious and interesting cylindrical font was brought some years since from the ruins of Maxstoke Priory. It is surrounded by a shallow arcade of semi-circular arches, within which are full length figures of the 12 apostles. Among the many additions to the Norman church some interesting and beautiful windows of the 14th century in the north wall of the nave are worthy of especial notice.

The party next went across the park to Stoneleigh Abbey, and by the kind permission of Lord Leigh were conducted through the mansion. Of the Cistercian Abbey, which was built here in the latter half of the 12th century, some important and highly interesting portions remain; several fine doorways of transitional character, that appear to have opened into a cloister, and a remarkably fine vaulted crypt or undercroft of the 13th century, divided longitudinally by a row of pillars from which spring the ribs of the groining. There are also considerable remains of the first—Elizabethan—mansion erected on the ruins of the monastery by Sir Thomas Leigh, but they are much mixed up and incorporated in the fine mansion built by Edward Lord Leigh in the reign of George II. This is an admirable specimen of Georgian Italian architecture; many of the rooms are very fine; the saloon is especially notable for the fine design and exquisite execution of the plaster ceilings and cornices, and the fine preservation of the oak wainscoting. The old gateway to the precincts of the monastery is a well-preserved example of the 14th century, and reminds one of that at Maxstoke of about the same

time. On reaching Kenilworth an interesting paper by Mr. J. Cotton, "On the History of the Origin and Development of the Defensive Architecture of the Country," was read, its value being much enhanced by the excellent plans and diagrams which illustrated it. The return journey to Birmingham was then made by the newly-opened line via Berkswell.

With regard to the arrangements for the coming session they cannot fail to give general satisfaction. The management have taken great pains in the selection of lecturers, and in the provision of items of great variety and interest for the subscribers; whilst in the Industrial Department the alterations which have been made in the classes, similar care has been exercised on behalf of the students. The School of Metallurgy, which was opened 12 months ago, has done good work, the excellence of the teaching given by Mr. Hions in this department being evidenced by the fact that out of 23 candidates presented at the Government examination in practical metallurgy, held in May last, no fewer than 21 passed in the first class, three of them in honours, and two in the second class, there being no failure whatever. At the examination of the class in iron and steel manufacture, also held in this department, two prizes and three bronze medals were obtained from the City and Guilds of London Institute. The number of students attending the metallurgical classes generally have shown that the Institute supplied a want in the provision thus made. In the Industrial Department the whole of the mathematical classes have been rearranged, and some of the matriculation and other London University preparation classes have been discontinued, the subject being dealt with in other classes. A new class in electro-metallurgy, in connection with the City and Guilds of London Institute, has been established, and should prove of use to those engaged in the jewellery trades in the town.

#### Registration of New Companies.

The following joint-stock companies have been duly registered:—

**THE INDESTRUCTIBLE ENAMEL COMPANY (Limited).**—Capital 50,000*l.*, in shares of 5*l.* To carry on the business of enamellers, ironfounders, dealers in timber, iron, coal, and minerals of all kinds. The subscribers (who take one share each) are—H. Noyce, Brockley; J. Walmisley, Willesden; F. Rumus, Homerton; J. W. R. Watson, Fulham; W. McArthur, Brockley; H. McKenna, 6, Billiter-street; W. R. Oswald, 75, Gracechurch-street.

**THE ABERGEELE COPPER AND SILVER ORE COMPANY (Limited).**—Capital 50,000*l.*, in shares of 1*l.* The acquisition by purchase or otherwise of any mines or mineral properties, leases, licenses, or agreements, &c., in the county of Denbigh, Wales, the exploring and carrying on all operations connected with a mining company, and more particularly to acquire for developing and working a piece of ground situated in the parish of Llansannan, Denbigh. The subscribers are—J. P. Davies, Flint, pawnbroker, 1125; F. Caprani, Flint, jeweller, 500; M. P. Jones, Flint, accountant, 250; W. Stainton, Bath, stockbroker, 100; T. Williams, Llansannan, shoe-maker, 125; J. Woolcock, Holywell, M.E., 25; T. M. Whittingham, Dyffryn, steward, 100; H. Sumner, Manchester, engineer, 25; J. Frankish, Manchester, engineer, 25. The following make up the first board:—Messrs. Davies, Stainton, Whittingham, Sumner, and Frankish. The number must not exceed seven or be less than three. Future directors will have to qualify in 20 shares fully paid-up.

**THE LAMBERT AND COMPANY (Limited).**—Capital 10,000*l.*, in shares of 5*l.* To acquire certain patents together with a business established at 16, Newgate-street, London, and to continue the same. The subscribers are—B. Mellor, Hampstead, 50; F. S. Donaldson, Streatham, 50; G. E. Lardeur, 64, Stamford-street, 50; C. Lambert, Ripon, 5; J. B. Crump, 41, Eastcheap, 5; C. V. Haycock, 114, Wood-street, 1; A. Watling, 77, Grosvenor-road, 1.

**THE HARDEN STAR HAND GRENADE FIRE EXTINGUISHER COMPANY (Limited).**—Capital 30,000*l.*, in shares of 10*l.* To manufacture, sell, and deal in apparatus and chemical compounds for extinguishing fire, &c. The subscribers (who take one share each) are—W. S. Ogilvie, Clapham; H. Bateman, 31, Queen's-road; P. S. Malcolm, Castle and Falcon Hotel; J. Petrie, 1, Metal Exchange-building; F. Bateman, Dalston; C. Coulson, Glasgow; W. A. Coulson, Glasgow; H. Hutchinson, Glasgow.

**THE BRITISH CHEMISTS' AND DRUGGISTS' TRADING ASSOCIATION (Limited).**—Capital 100,000*l.*, in shares of 5*l.* To enable retail chemists and druggists to combine in buying goods wholesale in the best and cheapest markets. The subscribers (who take one share each) are—E. F. Roberts, Brixton; W. Barber, 11, Canterbury-terrace; G. Elliot, 66, Fore-street; T. Colls, 283, Holloway-road; J. Sawyer, 63, Alma-street; F. Hamilton, Hackney; E. Starling, 2, Serjeant's Inn; A. C. Arnold, Hornon-street.

**THE VAN MINING COMPANY (Limited).**—Capital 15,000*l.*, in shares of 10*l.* The purchasing of the leases of the Van Mine, which is situated in the parish of Llanidloes, in the county of Montgomery, Wales, and all other property, machinery, plant, assets, and liabilities of a company bearing a similar name, and now in liquidation. The developing and working of mines or minerals, the sales of ores and other products and smelting same, and carrying on generally the various operations of a mining and smelting company in all branches. The subscribers (who take one share each) are—C. C. Baker, Clapton, clerk; W. H. Foy, 262, Kennington Park-road, accountant; J. S. Nicholls, 27, Cumberland-place, accountant; W. G. Carrington, Brixton, accountant; G. R. Hearn, South Norwood, accountant; J. J. Oulet, 16, Malvern-terrace, clerk; C. J. Nicholls, 62, Putnam-road, accountant. The subscribers shall elect the first directors, whose numbers must not exceed six or less than three. The qualification is fixed at 100 shares.

**THE CARDIFF PRINTING AND STATIONERY COMPANY (Limited).**—Capital 50,000*l.*, in shares of 10*l.* The business of wholesale, export, retail, and manufacturing stationers, printers, lithographers, &c. The subscribers (who take one share each) are—R. Corry, Cardiff; J. P. Singleton, Cardiff; F. Edwards, Cardiff; C. E. Stallybrass, Cardiff; C. R. Moxey, Cardiff; G. Fisher, Cardiff; J. Gathrie, Cardiff.

**THE ENGLISH BANKING COMPANY (Limited).**—Capital 2,001,000*l.*, in shares of 20*l.* and 1*l.* To carry on as principals or agents a banking business in England, France, Belgium, and elsewhere. The subscribers are—P. Fabre, Paris, 2000; C. Vaghié, Paris, 2000; H. de Sesmaisons, Chateau Plomenville, 2000; H. A. de Fresnel, Neuilly, 2000; E. Gobert, Paris, 1000; M. Pachot, Paris, 500; E. Herlofsen, Rouen, 500.

**COPPER QUEEN (Limited).**—Capital 500,000*l.*, in shares of 5*l.* To acquire by purchase, work, and fully develop the Copper Queen Mines and Smelting Works, which are situated in the territory of Arizona, United States, and any other lands, mines, and mineral properties in said territory, or elsewhere, in the United States of America, for the purpose of carrying on all operations connected with a mining and smelting company, and generally to deal in, sell, and dispose of ores and minerals, &c. The subscribers (who take one share each) are—H. G. Hinton, Poplar, secretary; W. J. Chappell, 61, Herne Hill-road, printer; W. C. Northcott, Peckham, traveller; T. E. Williams, 15, Hayter-road, correspondent; W. Felton, Poplar, accountant; A. Broughton, 53, Marlborough-road, contractor; R. Baird, 141, Brecknock-road, stockbroker.

**"NORCROSS" SHIPPOWERS COMPANY (Limited).**—Capital, 10,500*l.*, in shares of 105*l.* The purchasing, owning, and working of the sailing ship Norcross. The subscribers (who take one share each) are—G. Fish, Fleetwood; J. N. Ward, Fleetwood; S. W. Howard, Fleetwood; A. W. Smith, Huddersfield; J. Preston, Fleetwood; R. C. Ward, Fleetwood; W. B. Wright, Bootle.

**THE UNITED PORTLAND CEMENT COMPANY (Limited).**—Capital 25,000*l.*, in shares of 10*l.* To acquire a certain property, together with machinery and tools, situated in Wellington-lane, Ayre's Quay, Sunderland, for the purpose of continuing the business of cement manufacturers in all branches. The subscribers are—F. W. Harding, Sunderland, 250; H. Rawlings, Sunderland, 20; J. B. Sparkes, Sunderland, 20; F. Mitchell, Sunderland, 10; F. Wade, Sunderland, 10; E. Clarkson, Sunderland, 10; J. Henderson, jun., Sunderland, 1.

#### Meetings of Public Companies.

##### VICTORIA GOLD (VENEZUELA) COMPANY.

An ordinary general meeting of shareholders was held at the St. Enoch's Station Hotel, Glasgow, on Aug. 26. Present in person and by proxy 208 shareholders, representing 36,791 shares.

The Hon. AUGUSTUS JOCELYN (Chairman of directors) in the chair.

The SECRETARY having read the notice calling the meeting, the meeting was duly constituted, and the minutes of the first general meeting read and signed by the Chairman, the report and balance-sheet, which had been distributed among the shareholders, were held as read.

The CHAIRMAN then said—Ladies and Gentlemen: It now devolves upon me to ask you to approve of the report and balance-sheet. I cannot tell you much about the property myself, because I have not been there, but there are here in this room gentlemen who went out at very great personal inconvenience, and at very considerable amount of personal risk to visit the property, and they can tell you more about it than I can. All I can do is to congratulate you very much and myself on having the possession of such a most valuable property. It has now increased from what it originally was, and forms a perfect square, containing four million square metres, about 1½ mile square. It is acknowledged in that country to be one of the most valuable properties that has been discovered in any gold district. At that country it is considered that it will be in course of time equal to the very best mines in the country. I am not going to inflict a speech upon you, in fact I cannot very well do so, not having much to say upon the subject, but I am quite sure that if any gentleman wishes to ask any questions at all, those that I can answer from my personal knowledge I will be most happy to answer, those that I cannot from having no personal knowledge, I am quite sure either Admiral Powell or Mr. Larchin will do so; but now as a matter of form I move, as it is my duty to do, that the report and balance-sheet, as laid before the meeting, be approved and adopted.

A SHAREHOLDER: I beg to second that.

The CHAIRMAN: Should any gentleman like to ask any questions I shall be happy to answer them to the best of my ability.

A SHAREHOLDER: I wish to ask the auditor a question. Have you made any enquiry as to the accounts, and if you have a voucher for a sum of 50*l.*?

The AUDITOR: Have you any more questions to ask, because it will be convenient to answer them all together?

The SHAREHOLDER: Has Mr. Danby been lately in town, and has he made a call at your office?

The AUDITOR: The expenditure of 50*l.* has been incurred in travelling expenses, and I have a voucher for the 50*l.*

The SHAREHOLDER: Then you have no voucher beyond the fact that 50*l.* was paid.

The AUDITOR: That is all.

The SHAREHOLDER: And you consider that satisfactory as auditor to have that voucher.

The AUDITOR: Yes. I never asked for details of the expenditure. I thought it a reasonable sum.

Several SHAREHOLDERS: Quite right.

The SHAREHOLDER: Has Mr. Danby been in your office since his return?

The AUDITOR: Mr. Danby has been in town, but not in my office.

A SHAREHOLDER: I wish to draw attention that no ordinary meeting has been held until now.

The CHAIRMAN: No meeting has been held since the statutory meeting. If it had been the desire of the shareholders to have had a meeting they could either have called it themselves or requested the directors to have done so, which they would have done; but as the meeting could do no possible good because returns from the mine had not been received, and as two of the directors, first one and then another, had gone out to inspect the mine, it was thought a great deal more satisfactory for the whole body of shareholders, and more to the interest of the company, in which, of course, the shareholders have the principal interest, not to have a meeting till something definite could be laid before them.

Mr. THOMAS: Mr. Chairman, I beg to move as an amendment that the accounts be submitted to a committee of the members present to examine and report before being approved?

The CHAIRMAN: I would ask that the gentleman should give some reason for his amendment, or dissatisfaction with the accounts, in order that the time of the meeting may not be taken up.

Another SHAREHOLDER: Would you call upon this gentleman for some reason for making the amendment?

The CHAIRMAN: The amendment has not been seconded yet.

Mr. SONTAK: I beg to second the amendment.

The CHAIRMAN: The amendment has now been moved and seconded. I shall be glad to hear any gentleman who has anything to say on the subject.

A SHAREHOLDER: I ask the gentleman who moved the amendment to give his reason for troubling the meeting?

Another SHAREHOLDER: Or to point out the particular items in the balance-sheet to which he objects.

Mr. BARRY: The gentleman has asked me.

A SHAREHOLDER: I would call upon the gentleman himself to make the explanation. (Hear, hear, and applause.)

Mr. BARRY: I think as a shareholder I have a right to give explanations. (No, no.)

A SHAREHOLDER: I ask the gentleman who has tabled the amendment to make an explanation. (Certainly.)

Mr. THOMAS: There is 331*l.* 9*s.* 10*d.* in bank, and bills payable 100*l.*, subject to directors' fees 846*l.* 8*s.* 11*d.*

A SHAREHOLDER: This is a mere quibble, Mr. Chairman. (Hear, hear, and applause.)

The CHAIRMAN: On this account, gentlemen, their appears here a balance of 4457*l.* 19*s.* owing to the company; the 1000*l.* appears here as bills unpaid. A bill was then running, and has since been paid.

Mr. THOMAS: I ask if the 50*l.* is paid.

The CHAIRMAN: No; that has not been paid. I wish it were. (Laughter.)

Mr. BARRY: I wanted to ask Mr. Larchin a question in your own favour, and that is this—16,000*l.* has been given in addition to the vendors, instead of cash over and above their payment of the mine. I believe they have done it with the best intention, but—

The CHAIRMAN: I intended to tell you that presently. I intended to keep that as a little bit of sugar. After all it is one of the best things that has happened to the company since it has been established, but I did not intend to tell you until this little breeze had passed over.

Mr. BARRY: I was simply going to ask you if you had power to do so.

The CHAIRMAN: Yes; and we were very glad to do it. Indeed, and the shareholders ought to be very glad too. It is no advance of money, because no money passes; they take it in shares.

The CHAIRMAN then put the amendment, and, on a show of hands being taken, only four voted for it.

The original motion was accordingly declared passed.

The CHAIRMAN: The next thing, gentlemen, is the election of auditors. I am sure that any company having Messrs. Triba, Painter, Clerk, and Company as auditors would not wish to change them. (Hear, hear.) They were appointed by the directors, and their name is a household word in the commercial world; therefore, I do not think we should go further, and I now move that our present auditors be continued for another year.

The motion was duly seconded and unanimously agreed to, the auditors' remuneration being fixed at 25 guineas.

The CHAIRMAN then called upon Mr. Larchin to address the meeting.

Mr. LARCHIN: Ladies and Gentlemen—We have had before us the original reports which appeared on the formation of this company, and the prospects as to its future success. We have had these reports supplemented by the visit of my colleague, Admiral Powell, and by myself; and not only that, but by other independent sources, more or less valuable, according to the position of the men—one of them being in a high position at the Callao Mine, and the other an inspector of the various mines in the country. So far those reports have gone to verify and to put on record the statements that were made on the formation of the company, and I think we may, therefore, take it as demonstrated that we have there—

First, that we have got the outcrop, and I am quite sure that if Admiral Powell had not seen the lode cropping out he would not have allowed the statement to go forth. I am quite certain that I myself should not have done so, let alone an independent person. On the question of outcrop, a few words may be said on the important bearing it has on successful mining. It means this, that you are not working in the dark (or close mining, to use a technical term). In sinking a shaft and driving levels, you have first an enormous expense in sinking for two or three years, you have always the expense of mining it and keeping it up by heavier timber; besides this you have to supply it with very expensive machinery, which again costs you as much, and a large item is incurred in keeping the water pumped out of it. From these workings in their restricted area you are only able to put on a very few men, gradually increasing them as your works progress. In this mine we are free from the whole of that. It has enabled us, and will enable us, to put men to work at one, two, three, four, or even 20 different points; to keep 100 stamps employed, or 200 stamps employed, from the time you choose to erect them until—I cannot say when, it seems practically inexhaustible. So much for the advantage of the mine and the outcrop.

The next important feature is the extent of the area of our concession, extending to 4,000,000 square metres, nearly 1½ mile, which is somewhere about 1000 English acres; the whole of it is entirely covered with the most magnificent timber, several samples of which you see on the table before us. The saving to the company on that item alone during the next five years, with anything like vigorous working, will be sufficient in itself to recoup the whole of the purchase-money of your mine. Therefore, at the end of five years, we may reasonably expect that we shall be in possession of a property without practically having given anything for it. So much for the two facilities of the outcrop and the timber. The next is, that crossing this concession are two quebradas, or mountain streams. During seven or eight months of the year these are torrents, with an immense amount of water coming down, from which any practical supply can be obtained, even to work your machinery, for a very large portion of the year. Compared with other mines, I may tell you that some of them have to pump their water for more than two miles at a very large expense. We shall now have to take some means of providing ourselves with water during the dry season, which this year has been unusually protracted; and it seems a most extraordinary affair, an unusual drought has been over the whole world. I may say in some parts of the world sheep have been lost by millions. In Venezuela the rainy season, which generally sets in about May, when I left the country, at the end of June, had not then set in. The next point I would have a few words to say about is what we have done since we took possession of the property. We are situated 25 miles south of the most famous mines that up



to the present have been worked in that country. We have not got the country opened up for us; we had to make our own roads of some 30 miles, part of them over the savannah, and part of them through an almost impenetrable forest, to open up our mine. Accommodation for about 15 workmen has been erected, and the machinery which we bought—which we would call prospecting machinery, and which, in the words of the directors, were sent out with the view of thoroughly proving the value of our mine before rushing into an expenditure of 40,000, or 50,000, in machinery, which might afterwards prove a failure either from a wrong description or some other cause. A store for the supply of all these men, a mill-house, and all pertaining to that ordinary machinery, have all been erected and put into working order. It is a simple thing to speak about erecting a mill, but when you imagine the amount of labour that attaches to it you can see the work that has really been done. There is the framing of something like 14 in. square timbers. All the timber—which is harder than any of the timber we have got in this country, being purple-heart and green-heart and teak; and this description of timber has been won from the forest, and sawn from the trees, squared up, and shaped into the form that is required and smoothed and planed, and afterwards erected. There is there a very large amount of work done to bring the mine into that position; in fact, it was stated to me that the Victoria Company had done more in less time, and at a smaller expenditure of money than had ever been done by any other mine in the country. We have really, on a very small amount of money, done a very large amount of work—32 miles of road to open up, and getting the mill over the country, the framework sawn out and erected, is a very large amount of work for something less than 10,000, which we have spent on the mine. Of course an expenditure such as that once made is made once for all. In the future expenditure on the mine the mine would repay the spent money in returns, as our machinery will produce, immediately it goes to work, its practical result. Of the machinery we put up we adopted some prospecting machinery with the view of getting the largest amount out of the smallest outlay; and I am sorry to say that we find ourselves in that country rather unique with it. We are doing what is there unknown, and in any difficulty that arises it is not possible for us to replace the machinery. We regret now that we did not wait and spend more money on similar machinery to that which is used by other mines. The practice there is for you to go to another mine, where you can borrow and exchange for temporary purposes. We come now to this position. Having taken samples, which we have had tested, we find them to give a result of about 3 ozs. to the ton, and on larger quantities 8 ozs., and varying from 3 to 16 and 20 ozs.; and in working 50 to 60 tons right straight away as it came from the lode, giving us something like an average of 3 ozs.

We have demonstrated from these three facts that we have got the outcrop, the facilities we mentioned to you, and that our lode is as rich, at any rate, as we stated in the prospectus. In my opinion it is far richer, and that it will turn out so I have no doubt. Our machinery is now standing, and we are waiting to put on the additional machinery to work the mine up to the pitch to which it ought to be worked. It is proposed to utilise the machinery similar to that which is to be used at the Callao Company, and after having tried various other machinery that have gone to a very high classed American firm, and they are ordering what they call the Californian stamps. I have before me here the tenders for a similar class of machinery, which is ready to be shipped at a very short notice on receipt of order. And with 2 ozs. to the ton, or with only 1 oz. to the ton, and with 50 heads of stamps erected, we have a property which will return us very large profits and dividends. While I was in the country I took pains to enquire at the offices in the country as to our position as owners of the property. Of course, I knew that until we paid the last instalment it should not be in possession of the title deeds; but I procured from the principal office in Venezuela a document which I will read:

"United States of Venezuela. Federal Territory of Yururari. Administration of Finance. For Bs. 3000. No. 130. Guacipati, May 24, 1884. Citizen John C. Danby has paid in this office the sum of (Bs. 3000) three thousand bolivares, being the tax for the first four months of the present year on six hundred mines which formed the Altamaria and Victoria concessions, now belonging to the Victoria Company, according to documents executed on March 15, 1884, from which month this tax will be recovered from the company. L. Duarte Level, collector. [S. S.]"

So that we stand with our property vested in the names of the company at that date, March, 1884, which is since the election of the last new President, and no better title to any property could be held by any company working in that country. I do not know that I can say anything further. I have now told you our prospects, and the advantages of the property which have been confirmed by ourselves and by others disinterested, the trials that we have made, the results we have arrived at, and what the future promises, provided we work the mine the way we are going to work it. There is no doubt that 50 heads of stamps should be sent at once of the pattern working in the country, and then whether we got one ounce or five we have got a property which will return us dividends which will make the company unique in gold mining, and, in my opinion, one of the richest yet known. (Applause.)

A SHAREHOLDER: Does the gold on the table represent the whole of the gold recovered while the stamps were in operation?

Mr. LARCHIN: No; these are samples of it. There is a piece here which represents the gold; it is splendid stuff, and is in some parts of the mine more or less pure. There is another piece here which represents a portion of that similar sort of stuff refined; this is equal to 99 per cent., and of a value of 44, to 45, per ounce. When we get deeper and arrive at the water level you will meet with sulphur. I do not think we may anticipate this, as we have even got over our heads to work for a generation, working as fast as we can. In fact, I have stated before that language is really too feeble to convey to the uninitiated in mining, or to those who have not seen the property, the enormous advantages that the Victoria has. (Applause.)

Admiral POWELL: My experience is that I went over the mine with Captain Penberthy. He was the chief mining captain of Callao Mine; he took the samples, and they gave a very high result indeed. Mr. Larchin has not explained to you that we are driving a tunnel, and in driving the tunnel we continually meet "catenas"; these catenas are of great richness. The catenas and corporals of the mine are exceedingly good judges, and I did not see a single man there that did not feel highly pleased at our prospects.

A SHAREHOLDER: Were the samples you brought home fair samples?

Admiral POWELL: Oh, yes; absolutely fair samples. The CHAIRMAN: Gentlemen, I think we ought to be very much obliged to these gentlemen for going out to the mine, and for the very lucid explanations they have given. I think we should be very ungrateful if we did not pass them a vote of thanks. (Applause, and carried by acclamation.)

The CHAIRMAN: Gentlemen, I think our meeting is now over, and I hope that when we meet again we shall still have your confidence.

A SHAREHOLDER: I shall be most happy if the directors will take us into their confidence as I was beginning to lose confidence in them. I have heard from circulars that there is a party in London trying to damage the company, and I thought the directors in delaying to hold the meeting were simply helping them.

Mr. DANIELL said: It would be clearly a waste of time and money for meetings to be convened unless there is a desire on the part of the company or directors to hold one. I do not think it casts any reflection upon the directors in not having convened the meeting according to the time specified by the Articles of Association, and hardly think it fair that such a reflection should be passed.

The meeting then closed with a vote of thanks to the Chairman.

#### GREAT HOLWAY LEAD COMPANY.

A general meeting of shareholders, convened by Mr. Alfred Thomas, who has been appointed by the Court receiver and manager on behalf of the debenture-holders, was held at the Masons' Hall Tavern, on Thursday, to hear a statement from that gentleman regarding the position and prospects of the company.

Mr. ALFRED THOMAS took the chair.

The CHAIRMAN said: Gentlemen, it is natural you should wish to know why it was necessary to take the step I did—to apply to the Court to be appointed receiver and manager on behalf of the debenture-holders. Well, at the special general meeting of shareholders, held at the company's offices in Great St. Helen's in April last, you were made fully acquainted with the position of the company, and at that meeting the reason was explained why the company was in such a bad financial state, and it was subsequently explained to the shareholders who did not attend that meeting by myself in a circular—in fact, two circulars—one dated May 8, and one previous to that date—April 29. The facts are these. You were told at that meeting that the company was in debt 17,000, and perhaps it approached nearly 20,000. I, at the invitation of the Chairman, Mr. Mackeson, suggested that the balance of the debentures should be offered amongst the shareholders. Well, that was done, but I am sorry to say that the invitation was not very liberally responded to; in fact, it fell very far short of what I anticipated. The result was that the company were unable to pay their debts, and, as the bills became due, so they were used upon, and when the debentures became due on June 30, and interest was not paid, the debenture-holders had no alternative but to take possession of the property. Therefore, I, upon the day after the debenture interest became due and was not paid, applied to the Court to get appointed receiver and manager, thereby keeping out any creditors, because the debenture-holders have the claim upon the property. By taking that step I have had some trouble. I have had the judgment creditors fighting me, but I have successfully beaten them every time they have come into Court. Therefore, the property has been kept intact, and not only kept intact, but also kept working, and working at a profit. But if the property is to go on, and is to be kept for the shareholders, we should have some capital to pay the debts of the company, which amount to 17,000, or 20,000, including everything. Since I have been appointed receiver people have promised to take debentures to the extent of 20,000; but I want the shareholders to subscribe for the balance, so that we may be in a sound financial position. The authorities issue of debentures is 12,500, but the amount actually issued was 4250, only. There were others given as security to the extent of 4450, but the sum of 2225, will redeem that amount of 4450. Therefore, there will be an available balance of 7750, of debentures to be issued amongst the shareholders. Therefore, if they are taken at par there will be 7750, to redeem the 4450, which I have said will take only 2225, leaving a balance of 5525. The debts we have to pay are about 20,000, so there will be 3225, available for working capital, which will place the company in a sound position. Now this is not a speculative mine, but it is a mine in which you are working a vein of mineral, and it is working, even at the present low price of lead, at a profit. But it is most desirable that there should be a respectable amount of working capital; in fact, since I have been appointed receiver and manager I have had to pay a considerable amount of money out of my own pocket for bills and wages, for although we sell lead and blende for cash it is difficult to get the blende buyers to pay promptly. Of course that involves the necessity for capital. I may tell you that the mines are looking exceedingly well, and Captain Harris, in a letter I received this morning, says, indeed, that they are looking better than before, and that the returns will be increased next month. Now, what I want to impress upon you is, that I want you to find money by taking 2 per cent. debentures, which I am asking you to do as a security, because they are a first charge upon the property. And I may tell you that that property consists of Holway Concessions as well, because it was never paid for, and, of course, reverts to this company, and that part also was to be sold

for 20,000. Therefore, in advancing 12,000, upon such security it is an absolute security, and the unusual rate of 7 per cent. should be sufficient to make investors look upon it with favour. I have done all I can. I have saved the property, and I am working it and paying cash for stores, and there is not a debt beyond that old debt of 17,000. What I want you to do is to subscribe for these debentures, and put me in a financial position to pay the debts and go on thoroughly with the working. The thing is in my hands. I am the officer of the Court, and I must work the thing as economically as possible, and keep the property in good condition, and that I have done. If you will only assist me in finding money on these debentures the company will be in a position to go on with its operations, and I have no doubt we shall be able to pay dividends as we have done hitherto. There has been, as you will have seen, a rise in the price of lead since we last met, which, although small, has been a step in the right direction. Trade in the North has improved, and I think everything looks better and brighter than six months ago, and I hope you will not be so unwise as to leave this thing to glide into the hands of the debenture-holders for lack of subscribing a few thousand pounds, which you may look upon as a good investment at the same time. If any gentleman has anything to say I shall be happy to hear him, or I shall be happy to answer any question regarding the position of the company or of the mine.

Mr. RUSHFORD said it was a lamentable position for the shareholders to be placed in. Twelve months ago, when they met at Great Holway, everything was full of hope, and everything was said to be in a prosperous state, and every hope was held out to the shareholders regarding the future. And yet within 12 months the company was in a bankrupt state, or nearly so, and a receiver was appointed, and evidently, if something was not done the money of the shareholders would be lost. He was not a debenture-holder himself, and he should like to know how many shareholders were present who were not debenture-holders. If the company could be saved it should be saved.

The CHAIRMAN: With respect to the prosperous state of the mine 12 months ago, these matters were all fully explained in my circulars. The company was thrown into financial difficulties through the default of certain creditors of the company—men who agreed to take the shares, but who did not pay the money. One of those amounts was as much as 30,000. Had it not been for that, and had all the shareholders paid for what they had agreed to take, you never would have heard of any financial difficulty in the company. The only way to save the company from being wound-up was to take upon it what I took, which I believe has met the approval of all the shareholders. I may mention that although this default has taken place to the extent of 40,000, altogether, yet you will understand that the capital of the company will be reduced by that amount, so there will be less capital to pay dividend upon in future.

A SHAREHOLDER asked whether anything was to be got out of the defaulting individuals to whom the Chairman had alluded?

The CHAIRMAN said that action had been taken against them, and he thought there was a prospect of getting something out of them. At any rate, a compromise should not be in possession of the title deeds; but I procured from the principal office in Venezuela a document which I will read:

At the request of Mr. RUSHFORD a show of hands was taken by the Chairman with the view of ascertaining how many shareholders were present who were not also debentures, when four hands were held up.

Mr. RUSHFORD asked whether there were any arrears on the part of the debenture-holders?—The CHAIRMAN: No, not as far as my examination has gone.

Mr. WALKER: What are the profits for the month?—The CHAIRMAN: I have to work it, but I cannot do speculative work. I keep the mine open, and I do so by taking a small amount from the stock. If operations are carried on, a much larger profit might be made, but I think I am making a small profit, but the workings have been very considerably curtailed.

Mr. WALKER asked whether, with the present low price of lead, there was a prospect of making larger profits?—The CHAIRMAN: The prospects of the mine, I think, are improved; at any rate, they are quite as good. There was one point where the company had been working two years which was just becoming successful—the 30 ft. level north—but I had to stop it because it was exploratory work. There are other points which can be gone with and the return increased. The mine is in a right enough. The unfortunate thing is the low price of lead. The lead which we used to sell at 16, 18, 6d. per ton I am now selling at 12, 10s. per ton, and the metal is of a better grade. If we had the old price for lead I could pay the debts of the company in a few months.

Mr. RUSHFORD, Mr. WALKER, and one or two other gentlemen urged upon the Chairman the desirability of taking some steps to make the defaulters who had been referred to pay up.

The CHAIRMAN said all necessary steps would be taken in the matter.

The CHAIRMAN said action had been taken against the defaulters, but he did not want to reckon upon getting that money. He wanted to see the debentures taken, and surely the shareholders could subscribe that small amount of money. There were 240 shareholders. There were no expenses beyond working the mine, as the London expenses had ceased.

Mr. RUSHFORD said he believed Great Holway was about the best mine in the country, but he must say that when he entered the room he did not intend to subscribe for any of the debentures; but, after what he had heard from the Chairman, he certainly should subscribe for them, and he thought it would be to the interest of all the shareholders if they subscribed for these debentures. If they raised the amount asked for he believed it would put the mine in a prosperous condition. Mr. Alfred Thomas had been connected with mining all his life, and, therefore, they had got a good man at the helm, who would keep down expenses and properly work the mine. Conscientiously and seriously, in order to save the mine, he would advise the shareholders to find the money.

The CHAIRMAN said he had received intimations amounting almost to promises on the part of influential shareholders that they would subscribe, and he had no doubt that other shareholders would do so. He thought the amount asked for would be forthcoming. If they responded they would be in a position to relieve him of the receivership, and allow the company to resume its usual working. He might mention that he had received great assistance from Mr. Coupe, solicitor, of Holywell, agent for the Earl of Denbigh, to whom the company owed 3000, and he might say if all lords behaved to companies in the way his lordship had to this company it would be much better for the shareholders in those undertakings.

The CHAIRMAN, in reply to Mr. RUSHFORD, said that if he was relieved of the receivership a meeting would at once be called to decide who should be the directors of the company.

Mr. RUSHFORD said he should feel disposed not to elect any of the old directors except Mr. Mackeson, who had rendered the company substantial help. Personally he should be happy to do all he could to help the company through, and he should not object to act as a director for nothing, if by so doing he could forward the interests of the company.

A vote of thanks was then passed to Mr. Alfred Thomas for the action he had taken, and for his able conduct in the chair, and the meeting broke up.

#### HULL, BARNSELY, AND WEST RIDING JUNCTION RAILWAY AND DOCK COMPANY.

The ordinary half-yearly meeting of proprietors was held at Hull on Aug. 30, Lieut.-Col. SMITH in the chair.

The company's seal was formally affixed to the register of shareholders, and it was stated that in the six months ended June there had been an increase of 166 shareholders, the numbers being 7675 at the end of December, and 7841 on June 30.

The CHAIRMAN, in moving the adoption of the report and accounts, said that as to the report, he thought the first and principal item which would have attracted the attention of the shareholders was the paragraph relating to the issue of Lloyd's bonds. The directors considered that in the peculiar circumstances in which they had been placed they did the right thing in issuing those bonds to the contractors. The amount now due to Messrs. Aird and Lucas was 420,000. In consequence of the directors discontinuing the issue of Lloyd's bonds the contractors suspended the work. The directors, however, could not go on issuing those bonds, for obvious reasons. The directors considered that the contractors should be at any time in the position of being the heaviest creditors of the company, and, therefore, practically endowed with power to control its affairs. No doubt the suspension of the works was very much to be regretted. At the same time, in the directors' view they clearly had no other course to pursue. The shareholders would probably remember the arrangements which were made by the company and the contractors respectively for the purpose of carrying on a limited portion of the works which it would have been very undesirable to stop, and the arrangements which would be made by the contractors to guard the line and prevent heavy deterioration of the property, and he had no reason to think that they had failed to keep their engagement in that respect. The works in progress still included the completing of the Ouse bridge, the Hull bridge, the placing of the caisson at the lock entrance, keeping the lock dry and free from water, and the roofing possibly of some of the sheds. The engineer's report was of a very satisfactory character, and he thought he might say that he and his colleagues thoroughly endorsed every word of it after a personal inspection of the line made on Friday, when they travelled by the first train that ever ran from Barnsley to Hull. The work of the Ouse bridge was so admirably done by the contractors, and the engineers that whereas it was at least contemplated that the drop in the bridge when it was swung on the centre line of the railway would be 4 in. or thereabouts, to the satisfaction of all concerned it was found that the first time the bridge was swung in its position the deflection was only 1½ in. He was glad to say that the arrangements made with other great companies in respect to the junctions were now practically completed. Mr. Swarbrick, who had been busily engaged in the work, told him there was now nothing to be settled with any of these companies, with the exception that an answer was being awaited from the Great Northern on one point, but that point was immaterial, and would not affect the arrangements made. With reference to the most favourable form possible for the completion of the original undertaking, and, therefore, for the protection of the original shareholders, the effect of that would be this:—It would not be necessary at all to touch upon the Huddersfield and Halifax capital, nor had they power to do so even if they wished. The capital powers of the company were now more than sufficient to complete every work that was authorised by the bill, including the Huddersfield

and Halifax extension, and he believed Mr. Swarbrick agreed with him that he would be some years, it might be many years, before it would be necessary again to go to Parliament for what was termed a Money Bill. He would be sitting down to appeal to the shareholders not to lose confidence in the value of their property. He would ask them to consider what that property consisted of. It included not only 86 miles of railway and 46 acres of dock, but a mileage of the West Riding and Huddersfield and Halifax line, power to make fresh docks in Hull when the increased requirements of the trade needed them, and running powers over the independent line of the East and West Yorkshire Railway into Leeds, which was in direct competition with the North Eastern Railway. It also included the working, when made, of the line to the North, the Great Fenton Railway, which brought them into direct communication with the North Eastern, Gateley Bridge, and other places. Could it be honestly said that that property before them in 1880? Of course there was a lamentable depreciation in the value of the shares. But they in Hull were not ignorant of the causes which led to this depreciation. There had been repeated instances of the causes which led to this depreciation, notably the Hull and Selby line, the 50½ shares of which were for 12, 10s., and ultimately bought by the North-Eastern for 112½. The Hull had passed through a year of almost unparalleled anxiety and trouble, and they had ever had. But after a storm came a calm, and he would venture to think that the stormy waters upon which they had ridden were settling down, and that calmer water was in front of them. But there would be other storms unless they all pulled together shoulder to shoulder, and unless they all made up their minds that this money which Parliament had given them should be raised in the most favourable form for a specific purpose should be power specifically applied to the object for which Parliament intended it. The part he was ready to do his share, and he was sure that the directors would do their part, and if the proprietors would only come forward and finish the property, he ventured to think they would never regret it.

Mr. FISHER seconded the motion, which was unanimously agreed to. The CHAIRMAN, in moving the next resolution, said that he was satisfied considering the opposition raised at a former time, that only one party had received against the proposals of the directors. This was doubtless largely due to the fact that the assent of the London proprietors to the principal clause of the bill had been obtained. Several reasons might be urged in favour of the particular form in which the capital should be raised. Before this was agreed upon it would be necessary to have a revised estimate, that they might know the last shilling what they would have to pay for their works. He saw the reason why the stock should not be issued at par, less the nominal charges of commission, postage, and advertising. With the good harvest and a reasonable confidence, and a partiality for debenture stock, and the state of the money market, he believed there would be no difficulty in raising the money. The shares he issued to the old proprietors *pro rata*? As soon as ever the issue of the security had been decided upon the shares would be offered to the old holders, and doubtless their applications would have priority over those received from the general public. Some of their London friends thought the clause in the Corporation agreement tied them down to a great deal too much. He had always found the Corporation very friendly towards the company. When it was necessary to ask for a modification of the clause he believed the question would be discussed in such a spirit as would be in the interest of the Corporation and of the shareholders, of whom the Corporation formed an important body. He proposed:—"That in pursuance of the powers conferred on the company by the Hull, Barnsley, and West Riding Junction Railway and Dock (Money) Act, 1884, and by the Acts incorporated therewith, the company be and are hereby authorised to raise the sum of 1,500,000, by the creation and issue of debenture stock, debenture bonds, or mortgages (or wholly or partially by one or more of those modes respectively), and that the same be issued by the directors at such times to such persons on such terms and conditions and in such manner as they may from time to time determine."

The resolution was unanimously adopted, and the CHAIRMAN then moved the confirmation of the appointment of Messrs. Forbes and Swarbrick as managing directors at a salary of 2500, each per annum, the agreement being for the term of years, and he stated that Mr. Forbes would give up two or three of the positions he now held in order to be at liberty to devote as much time as was necessary to the affairs of the company.

A cordial vote of thanks having on the motion of the Mayor of Hull been passed to the directors, the CHAIRMAN, in replying, said he thought he might confidently state that at no period in the history of the company had he felt so quiet and comfortable about their prospects as now. He really felt that they had got men with them, who, to use an expression which he very much admired, and which was used by Sir Edward Watkin—one of the few expressions of his that he ever had admired—that they had got men with them who were rated with the right sort of experience, and he trusted that when the shareholders met next February they would be within a measurable distance of opening their railway and dock.

WHEAL UNY.—At the meeting on Aug. 30 (Mr. W. Pike in the chair) the accounts showed a loss on the 16 weeks' working of 1884, increasing the debit balance to 4696. A call of 7s. 6d. per share was made. Capt. W. Hambly reported that since the last meeting they had completed the cistern pit, and fixed the 12 in. drawing lift at the 203. They had also sunk 4½ fms., the shaft being now 5 fms. below the level. The lode in this shaft continued large and well-defined, composed of friable quartz, chlorite, and mudstone, and of its size 16 ft. per fathom. The 203 had been extended west of shaft 19 fms. For the last 2 fms. it had given a complete, and was now worth fully 12, 10s. per ton. They expected to complete the old sump shaft to this level in a few days. The 193 was extended west of engine-shaft 51 fms., or 15 fms. since the last meeting. This shaft drove the lode had been greatly improved by a branch or side lode falling into the tin lode, and giving it a character unusual at this depth, yielding yellow copper of a high percentage, and worth 12½ per fathom. These credits of copper made it important to see the lode at the 203 under this point, if its appearance in the bottom of the level was to be taken as a guarantee of the future. When the point indicated should have been reached.—Mr. Dingle said the eastern ground had been a complete blank, and they must stick to getting the granite. The Chairman observed that in a conversation with Capt. Jones Thomas that gentleman advised going down in the granite by all means.—Mr. Clinton added that Capt. Thomas on one occasion inspected that quarry for him, and then laid great stress on the importance of Wheal Uny coming down on the granite; then it was not known at what depth the granite would be encountered.—The Chairman said he had been writing with regard to a remission of dues during pressure, and after some trouble Mr. Lane had consented to a remission of dues on the subject with the Educational Commissioners. They did not anticipate any difficulty in appealing to Major-General Buller, the second Lord. For a complete proof of the granite he was of opinion that they would have to go 10 fms. deeper.—Mr. Clinton was informed that the price received for tin had been on an average 44, per ton, and thereupon remarked that that meant a loss to them of 25, per ton. Was it, he asked, advisable to return tin by means of the stamps? Why not sell the tin in the stone, and save the cost of stamping?—Capt. Hambly replied that they would have to allow the "bargain buyers" 1s. per ton for returning charges, whilst their returning charges were only 1s. 6d. per ton.

PEDNAN-DREA.—At the meeting on Aug. 29 (Mr. R. S. Teague in the chair), the accounts showed a profit on the 16 weeks' working of 1884, reducing the debit balance to 2981, 1s. 11d. The Chairman stated that during the past month they had been stopping in the back of the 100, and the mine had been worked at a profit of 1200. In consideration of the improved prospect of the mine it was decided not to make a call, and the small debit balance was carried forward. Capt. Thomas and Kemphorne reported that since the last general meeting the 100 west had been driven on the south part of the lode 3 fms. Cross-cut was then driven 1 fms. north, and intersected the north or productive part of the lode. The lode was 5 ft. wide, and worth 25, per fathom. They then set this point to a full part of men to drive east and west of cross-cut. The 100 west was now extended west of cross-cut 6 fms. 3 ft., the lode is 5 ft. wide, and worth 25, per fathom. The 100 east is extended east of cross-cut 2 fms. 3 ft., the lode is 5 ft. wide, and worth 15, per fathom. The lode in the back 25, per fathom, worth 25, per fathom for 3 fms. long. They have now every reason to suppose they have reached the rich run of tin ground passed through in the levels above. The tribute department consists of 11 pitches, and 51 men at tributes varying from 11s. to 14s. 11. These men are earning fair wages in their respective tributes, and there are reserves of similar quality ground for some time. Looking at the recent discovery at the 100 west, and from the general prospects of the mine, they strongly recommended the getting of the pitwork in proper order preparatory to the forcing of the mine to a deeper point. The recommendation was agreed to, and the pitwork was adopted, and they were instructed to take immediate action in the matter.

STAVELEY COAL AND IRON COMPANY.—At the meeting on Tuesday (Mr. Charles Markham in the chair) the report for the year ended June showed a net profit of 39,939, 13s. 10d. This, added to the balance brought forward from the last account, showed a total available profit of 64,301, 7s. 6d. An interim dividend was paid in February last of 3s. per share on the A and C shares, and 5s. per share on the B and D shares, which amounted in the aggregate to 19,550. The directors now proposed to pay a similar dividend, carrying forward a balance of 25,201, 1s. 10d. to the next account. It was stated that during the past financial year the most severe competition had existed in all the trading operations of the company, and it was considered that taking into account the adverse times, they were holders were to be congratulated upon the result of the year's working.—The report was adopted, and the dividend confirmed.—Mr. Kidley and Mr. Bodley were re-elected directors, and the auditor (Mr. Collier) was also re-elected.

ST. JUST UNITED MINES.—At the meeting held on the mine on Thursday (Mr. T. B. Bolitho presiding) the accounts showed a net profit of 2849, bills, 636, total, 3485. Credits: Tin sold 78 tons, 3664, other credits, 71, total, 3735, showing a loss of 133, on the 16 weeks' working. The agents report that for nearly two months they had raised but little tin from the 120 ft. level on Bellin lode, as this part had to be suspended for five weeks until the water was drawn out of the Cape Cornwall part of the mine, which with the Bellin lode has considerably improved, and the future returns will be increased independent of the Oream Pot lode, which is again opening out rich. The water-stamps have been idle for some time on account of the drought, and over 15 tons of tin have been broken more than the agents could return. The general prospects of the mine are reported to be exceedingly good.

CAMBORNE VEAN.—At the meeting on Thursday (Mr. Teague in the chair) the accounts showed a loss on the four months' working of 253, and a debit balance of 270. The Chairman, alluding to the notice of motion that the mine be converted from the cost-book system into a limited liability company, said he had communicated with the shareholders, 5000 of whom were in favour of the new departure. Commenting on the formation of a limited liability company he observed that he and his friends thought it was necessary either to mortgage the mine and state of things—that of simply working in the shaft lode. No striking had been done, and his friends and himself are convinced that the property was



UNITED STATES TIN MINES.—The discovery of tin ore in the Black Hills has, writes Prof. W. P. Blake, led to much active prospecting of the region during the summer; and there are, no doubt, several distinct localities where the ore occurs. Up to this point, however, very little actual work has been done, except upon the Etta, the original discovery point. Specimens of ore from this mine have, I doubt, been made to represent other localities where it was inconvenient, if not impossible, to find tin ore. It is time, therefore, to give some warning to the public, and especially to those persons who may be disposed to invest in tin mining enterprises in the Black Hills. I wish particularly to direct attention to a certain pamphlet, issued without my knowledge, but apparently containing the substance of my communications to your Journal last September upon the discovery of tin ore at the Etta Mine, Tin Mountain. While having the appearance of authenticity, it is a garbled and misleading issue, in which the name of the Etta claims is suppressed, and misstatements are made to apply to an entirely different group of claims on the north-east part of the hills—claims of which I have no knowledge. There is also a careful elimination of my statement of an average of 3 per cent. of black tin, leaving the text in a form to make the average appear to be twice as high. My original descriptions of the Etta discovery, freely given to the public, thus made to aid unscrupulous persons to dispose of their claims. There may be other similar perversions. I have seen in samples of ores from various parts of the Black Hills fragments of ore I could identify as coming from the Etta, such tin ore being sufficient to give a fair per cent. of tin to otherwise worthless rock. There may be other cases of such misrepresentation, and the public should be very cautious in accepting statements, assays, and reports promulgated by strangers and irresponsible parties. The Etta Mine, on which report was made, is now the property of the Harney Peak Tin Mining, Milling and Manufacturing Company of New York, and is now being actively developed by that company.



## Mining Correspondence.

...TUN.—W. Bowen, Sept. 1: We resumed pumping in water, starting a head of about average delays and disappointments consequent upon starting a head of new pitwork, and now all is running smoothly. The water rose about 10 ft. during the time of fixing the new 40 fathom lift and cleaning down the shaft from the 30. At Water Bank we have completed the skipway between the engine-room and 45 fathom level, and are now fixing the compressing machinery, and our pipes for connecting the workings of this mine. Our miners have completed the excavation in Clayton engine-room for the large compressor, which



Small good progress with the adit cross-cut north; there is a very considerable flow of water from the end. We have intersected several small veins of quartz containing copper ore and arsenical mudstone, and altogether the ground we are passing through is of a most congenial and highly mineralised character, which gives us strong hopes that the Ding-Dong lode, when intersected, will be found to be highly productive.

at 77 lbs. per fathom; the lode will yield 1 ton of copper ore and 1 ton of molybdenum per fathom. To drive the 1st, west of new shaft, on the north part of the lode, by four men, stent the month, at \$1. per fathom; the lode will yield

It will be remembered that at the Prince of Wales meeting it was decided to reduce the costs of working by driving two levels only as pioneers, and work the already discovered ore ground on tribute. By this means the loss on the last month's working was reduced considerably. The pioneer levels were the 90 and west, where we are daily looking for a good discovery, and the 102 and east. These points prove the mine both east and west. This morning the agent reports that on taking down the lode in the 102 east yesterday it has enlarged and improved in value to 50/- per fathom for tin and 1 ton of copper ore per fathom. This is the finest lode ever seen in the mine, and may lead to important results. We remember years ago just before the discovery of copper was made that paid good dividends, shares rose from 5s. to 3/- in a very short time, and if history would but repeat itself it would be a good thing for mining generally, for Prince of Wales shares are well held and well distributed. We shall know more of the lode in a day or two, as there are 6 ft. more to take down. So far as seen, the agent writes, "should it last it will be the best thing ever seen in the Prince of Wales. I have not seen so rich a lode as it is to-day for many years."



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## The Mining Market: Prices of Metals, Ores, &amp;c.

METAL MARKET—LONDON, SEPT. 5, 1884.			
LEAD.			
Fig. GMS. f.o.b. Clyde...	2 1/2	2 1/2	2 1/2
Scottish, all No. 1...	2 1/2	2 1/2	2 1/2
Wales, f.o.b. Wales...	5 0/0	5 0/0	5 0/0
Stafford...	5 0/0	5 0/0	5 0/0
In Tyne or Tees...	5 0/0	5 0/0	5 0/0
Swedish, London...	9 0/0	9 10/0	9 10/0
Rills, Welsh, at works...	5 0/0	5 0/0	5 0/0
Sheets, Staff., in London...	7 5/0	7 10/0	7 10/0
Plates, ship, in London...	7 5/0	7 10/0	7 10/0
Hoops, Staff...	7 5/0	7 10/0	7 10/0
Nail rods, Staff., in Lon.	8 5/0	8 5/0	8 5/0
STEEL.			
English spring...	12 0/0	12 0/0	12 0/0
cast...	10 0/0	10 0/0	10 0/0
Swedish, keg...	13 0/0	13 0/0	13 0/0
lag, hain...	13 10/0	13 10/0	13 10/0
Rails at works...	12 0/0	12 0/0	12 0/0
Light, at works...	12 5/0	12 5/0	12 5/0
IRON.			
English pig, common...	11 0/0	11 0/0	11 0/0
" L.B. ...	11 2/0	11 7/0	11 7/0
" W.B. ...	11 5/0	11 10/0	11 10/0
sheet and bar...	12 0/0	12 0/0	12 0/0
pipe...	12 5/0	12 5/0	12 5/0
red...	13 0/0	13 0/0	13 0/0
white...	14 10/0	14 10/0	14 10/0
patent shot...	14 0/0	14 0/0	14 0/0
Spanish...	19 10/0	19 10/0	19 10/0
NICKEL.			
Metal per cent...	—	—	—
Ore 10 percent per ton...	—	—	—
SPELTER.			
Silesian ordinary brands...	4 0/0	4 0/0	4 0/0
special brands...	4 7/0	4 7/0	4 7/0
English Swansea...	15 10/0	15 10/0	15 10/0
Sheet zinc...	17 10/0	17 10/0	17 10/0

\* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 1X 5s. per box more than 10 quoted above, and add 5s. for each X. Terne-plates 2s. per box below tin-plates of similar brands.

REMARKS.—With the exception of tin, which has been rather fluctuating, our market has remained steady during the past week, and the amount of business doing has continued limited. As the fluctuations in tin are to be solely attributed to speculative causes no particular importance need be attached to them, and the actual state of trade is without change. The uncertainty of the future is what checks business, confidence having been shaken is not so easily restored, and buyers prefer to purchase as their pressing requirements necessitate rather than anticipate their wants. How long the existing feeling of depression will remain it is impossible to say, and there is an equal amount of uncertainty whether the revival when it does occur will burst suddenly upon the market or be of a steady gradual character. We can only look at existing features and influences, and gather from former precedents the likely effect they will have upon the market. At the early part of the week the country had brought under its notice in one of the Midlothian speeches the greatly improved financial position of the country, and this adds one further step for encouragement that future trade may not be so gloomy as many would picture it. Low prices, cheap money, good harvests, the country's improved financial position, considerably reduced National Debt, form a backbone to trade at the present time—a backbone, too, which is doubtless sufficiently strong to ward off any serious crisis during these times when adverse features are allowed full play, and also permitted to bear their entire influence upon the market, and, further, these favourable influences must almost of necessity stimulate business to a very large degree as soon as the unsatisfactory features are removed or even partially removed.

Referring to the statistics that have been published this week for the month of August, all metals appear to have improved in their statistical position, although in iron any good effect that might have arisen from reduced public stocks has been entirely counterbalanced by the Cleveland makers' returns, which are decidedly unfavourable. Again, as our iron industry now, there is a considerable falling off in the deliveries and shipments from Middlesbrough and Scotland during the past two months; and, although it is to be hoped that this deficiency has yet to be made up, and will thus greatly increase the future demand, yet it is a matter which proves a most deplorable state of business for the time being. The further improved statistical position of the copper market has as yet borne but little effect upon that trade, though it seems scarcely probable that a metal for which there is such a growing demand—as is evidenced by the repeated excellent deliveries, and where supplies are kept so much under the requirements of the trade, as is proved by the considerable reductions that have been taking place in stocks for several years past—can remain much longer at about the lowest figures at which prices have ever been known.

In tin there is also a reduced stock, and at one time it appeared that a sharp rally was to be effected in that metal; but not so, the advance was of but short duration, and the reaction was every bit as sharp as the rebound, but it has again since recovered. The metal is one that is governed so largely by speculation, that it would be premature to predict the future. But sufficient has doubtless been said to convince all that statistically the metal trade has improved, and whilst there is room for further improvement, that has a good chance of being effected by the various favourable influences to which we have already referred as likely to augment the demand. Speculative buying may be kept dormant through sundry causes, but the features which now exist are those which must bear upon legitimate and bona fide trade, and which there is every reason to expect must, sooner or later, expand, and that possibly to a very material extent.

COPPER.—At the commencement of the week this market was a little stronger owing to the publication of very favourable statistics, but operators have been shy to follow up their market, and prices after remaining steady for some little time have again assumed an easy tendency. It is a matter of considerable surprise that operators do not bestow a good deal more attention upon this market instead of neglecting it almost entirely. On Aug. 30 the stock was reduced to 42,556 tons, against 43,052 tons on July 31. Compared with the corresponding periods of the two previous years it is found that there is rather more than 6000 tons less than at the same time of last year, and the price is 10s. lower, while there is a still larger decrease in the stock compared with 1882, and the price is about 10s. per ton lower than what it was then. The deliveries last month were very good—5761 tons—which is very satisfactory considering the exceptionally large delivery that was made in the previous month.

It is a noteworthy fact that the only precedent at which prices were so extremely cheap as they are now was at a time when stocks were upwards of 20,000 tons in excess of what they are at the present time—a quantity sufficiently large to meet from two to three months' requirements. The market is kept back from the same fears that have long existed—heavy supplies from America. It is a question, however, whether too much importance is not placed upon what may or may not be forthcoming from that country. It is reported that heavy contracts have already been entered into, and in giving due weight to these advices it must not be overlooked that hitherto any quantities that have been sent forward from that country have found sufficient outlet in the ordinary demand, and stocks have continued to materially reduce. The CBIH charters for the last half of August were advised on Monday as only 1100 tons.

IRON.—The iron market remain dull, and there is little to vary the monotony that has existed during the past few months. In the Staffordshire districts a little more animation, or rather we should say a little less inactivity seems to exist, and in isolated cases prices are a shade firmer, but there is no genuine improvement in the trade, and there are still many masters preferring to keep their mills closed

rather than accept the present very unremunerative prices. The statistical position of the market seems to have improved, at least so far as the returns representing the public stocks are concerned. For the month of August there is a decrease in Connal's stock in Glasgow of 1694 tons, and in Middlesbrough 717 tons, but this, satisfactory as it may appear, fails to give any stimulus to the demand, and speculative business continues almost dormant. Speculators are not likely to be tempted into the market by slightly reduced public stocks, when deliveries and shipments are exceedingly bad. Take, for instance, the deliveries for last month from Middlesbrough and compare them with the corresponding period of last year, and there is a deficiency of upwards of 16,000 tons, and then turning our attention to Scotland we find there the shipments last month were about 25,000 tons less than in August 1883. In other words, the aggregate deficiency in Scotland and Middlesbrough is no less than 41,000 tons for August 1884, compared with August 1883.

Unsatisfactory as it may be that operators do not bestow their attention to the market and implant vitality to the demand, yet at the same time these figures represent a still more unsatisfactory state of affairs, and are a striking evidence of the most deplorable condition of this trade at the present time. In makers' iron there continues to be but a small business doing, and prices have undergone scarcely any alteration. On Monday the Glasgow warrant market was quiet, and business was transacted between 41s. 3d. and 41s. 3½d.; but on Tuesday there was more doing, and prices stiffened up slightly, the quotation being 41s. 4½d. to 41s. 6d., with sellers over at the close at the higher figure. On Wednesday the market was strong, and there was a large business done between 41s. 5d. and 41s. 7½d., and yesterday there were a moderate number of transactions only carried through, the price being a shade easier at 41s. 6½d. to 41s. 5½d., and the closing figure this afternoon is 41s. 6d. per ton. The shipments last week were 9533 tons, against 15,833 tons for the same week of last year, being a decrease of 6144 tons, and which makes the total shipments for the whole of this year 374,768 tons, against 442,833 tons for the same time of last year, and 435,662 tons for the similar period of 1882. The number of furnaces in blast is 94, and the public stock has been further reduced by 123 tons, and now amounts to 585,867 tons, against 585,995 tons last week.

The imports of Middlesbrough pig-iron into Grangemouth last week were 3980 tons, against 3190 tons for the same week of last year, being a decrease of 790 tons, and which makes a total decrease for the whole of this year, compared with last, of 5870 tons. The Middlesbrough market is again reported quiet, business being dull and shipments small. The deliveries last month were 71,815 tons, against rather more than 83,000 tons for the same month of last year. The shipments last week were 16,678 tons, and the public stock last week was reduced by 116 tons, and amounted to 55,944 tons. The price of warrants is 37s. No. 3 is offering at 38s. 4½d. by second-hand holders, and makers quote 37s. Forge pigs rule from 33s. 9d. to 34s. In manufactured there is not quite so much depression as during the last few weeks, and prices are much about the same, bars being quoted at 52s. 2d. 6d., angles at 42s. 15s., plates at 52s., and puddled bars at 65s. per ton. The Cleveland masters' returns for August are most unsatisfactory, for they show a further accumulation of stocks to the extent of 15,075 tons, which, added to the increase which was made in July, makes an excess of 22,695 tons for the two months.

The total stock of Cleveland iron is now estimated at 292,594 tons, the total make of pigs during July being 201,763 tons. The advices from Wolverhampton are once again more favourable, although buyers and sellers still appear to have difficulty in arranging prices. There is an improved demand for pigs, and some Northamptonshire qualities have advanced 2s. per ton. Certain Northampton sorts are quoted at 42s., and Derbyshire at 42s. 6d. Barrow hot-blast rule at 55s., and Blaenau hot-blast at 55s. Manufactured is also rather dearer, bars being slightly higher, and sheets for galvanising somewhat dear, with a slightly better demand. According to advices from Birmingham the market there has assumed a more cheerful appearance, and prices are stronger. Some fair sales have been effected in pigs, and most brands are quoted up 2s. 6d. per ton. There has been also a slight advance in bars at full prices, whilst a better tone over the market in that district.

TIN.—This market has been very changeable, but the fluctuations have tended in favour of holders. Business on Monday was done as low as 81s. 5s., from which there was a smart rally to about 82s. 10s., which was paid on Wednesday, the price then quickly receding to 81s. 15s., and has since again recovered fully 15s. to 20s. per ton. The deliveries last month were very good, which is, perhaps, the very best feature in the market at the present time. They amounted to 2405 tons in London and Holland combined, but then there was a deficiency, to be made up from previous month, and, consequently, they compare very favourably with corresponding months. The stocks of Straits and Australian already here has been slightly reduced, but that affords shows an increase, making the total on Aug. 31, 8050 tons, against 7960 tons on July 31.

The stock of Banca, however, has been considerably reduced, and there is rather less Billiton on the spot, while stocks in America are also said to be diminished; thus the totals appear favourable, being 13,236 tons on Aug. 31, against 13,783 tons on July 31, and 15,498 tons on Aug. 31 last year. The heaviest shipments during last month were from Straits to London, which amounted to 1450 tons, those from Australia to London being 700 tons from London and Holland 400 tons, and from Straits to America 175 tons. The fluctuations that have taken place during the week can hardly be attributed to the statistics; they have arisen from the action of operators, who apparently have more influence over the market than any returns of the stocks, deliveries, or supplies, and upon their action the immediate future of the market mainly depends.

SPELTER is unchanged and quiet. We call ordinaries 14s. per ton. LEAD is dull and inactive. Spanish is still quoted at 10s. 10s., and English at 11s. to 11s. 6s. per ton.

STEEL.—There is not much business doing, and prices have undergone no alteration.

TIN-PLATES.—A very fair business continues to be transacted, chiefly in cokes; but prices, although without any quotable change, are nevertheless barely so firm as they were a week or two back.

QUICKSILVER remains firm at 5s. 10s., and there are now signs of an improved demand for export.

There has been a little more activity in the MINING SHARE MARKET this week. Still, business generally is very dull, and quotations mostly nominal. The principal demand has been for Dolcoath, Tincroft, and New Kitty, all at an advance, and transactions have also taken place in Oscar, Prince of Wales, Wheal Crebor, New West Caradon, West Basset, Wheal Basset, and a few others.

TIN.—Statistics, it is said, are in favour of a rise in tin, but statistics, like figures, are not always to be depended upon as safe guides, and tin goes down upon them. In shares there has been rather more doing in one or two prominent mines. Carn Breas are quoted 3 to 3½. Cook's Kitchen, 9 to 10; the mine is looking better in the shaft. Dolcoaths have been in fair demand, and leave off at 71 to 73. East Pools, 41 to 42; Killifreth, 4 to 4½. New Kittys have advanced to 1½, 1½; South Condurrow, 8½ to 9; South Frances, 6½ to 7. Tincrofts have been more in request, and have advanced to 8, 8½. The mine has further improved in the 222 end east of cross-cut, and in the 234 west. Pedn-an-drea meeting took place in Cornwall, and a profit was shown of 13s. in four months' working, and a balance against the mine of 298s. The tin sold realised 2197s. The improved prospects of the mine rendered a call unnecessary.

West Bassets are weaker, at 2½ to 3. West Kittys are also weaker, at 9½ to 10½. Wheal Agar, 16½ to 17; Wheal Basset, 2½ to 3; Wheal Grenville, 5½ to 6½; Wheal Kitty (St. Agnes), 4 to 4½. Wheal Uny, 4 to 5; at the meeting in Cornwall a call of 7s. 6d. per share was made. The accounts showed a loss on the four months' working of 1580s., and a debit balance of 4696s. The tin sold—66 tons—realised 2953s. Polberro, 1½ to 1½; Carn Camborne, 4 to 4½; East Blue Hills, 4s. to 6s.; Mounts Bay, 2s. to 4s.; Phoenix, 1½ to 2; South Kitty, 8s. 9d. to 11s. 3d.; Tresavean, 4 to 4½; Trevaunance, 1½ to 1½; West Frances, 5½ to 5½; West Godolphin, 1 to 1½; West Phoenix, 4 to 4½.

COPPER MINES have been pretty quiet during the week, with the exception of a demand for Prince of Wales that arose on Friday, on the improvement becoming known. Most other quotations are nominal. Bedford United, 1½ to 1½; Devon Great Consols, 2½ to 3½; Gannislake (Clitters), 2 to 2½; Marke Valley, 11s. 3d. to 13s. 9d.; Mellanear, 2 to 1; New West Caradon are in request at 4s. to 5s.; South Caradon, 4 to 5; West Crebor, 1s. to 3s.; Wheal Crebor, 1½ to 1½; West Seton, 3 to 3½. Prince of Wales have become in demand, and advanced from 3s. 6d. to 4s. 2½; the lode in the 102 end east has improved in size, character, and value, being over 4 ft. wide, worth 1 ton of copper ore and at least 50s. per fathom for tin. The 90 west is also likely to improve. Devon Friendship, 1s. 6d. to 2s. 6d.; a parcel of 50 tons arsenic and about 20 tons of copper ore ready for sale.

LEAD MINES are quiet, and prices merely nominal. Roman Gravel, 3 to 3½; Great Laxey, 9 to 10; Leadhills, 1½ to 1½; Old Shepherds, 9s. to 11s. New Langford, 4 to 4½; the agents' report this week would seem to indicate good discoveries for silver. From one pitch yielding 85 to 100 oz. of silver per ton of stuff, several hundred-weights, he says, have been broken within the past ten days. East Wheal Rose, 4 to 4½. At South Darren the lode in the 130 west is worth 2½ tons of silver-lead ore per fathom; 25 tons of lead ore will be sampled this week. Miners, 5 to 7; Weardale, 1½ to 1½.

FOREIGN MINES.—The transactions have been very few, and prices are rather lower than last week in almost all cases. Akankos are quoted 5s. 16ths to 7s. 16ths; Alamillos, 1½ to 1½; Almada and Tinto, 1½ to 1½; Balkis, 4 to 4½; Birdseye Creek, 4 to 4½; the following telegram has been received from the superintendent, Mr. Goodwin:—"We have cleaned up, result being as under—Red Dog, \$14,500; Uncle Sam, \$5000; Neese and West, \$8000; remittance, \$7000." Callao Bis, 1½ to 1½; Callao Bis, 7s. to 9s.; Chile, 4 to 4½; the manager at the mine telegraphs:—"Remittance of gold for July

1690 ozs., the result of 29 days' work with 60 stamps." Chontales, 1½ to 2½; Colombian Hydraulic, 4 to 4½; Colorado United, 1½ to 2½; Copacabana, 2½ to 3½.

Fortuna, 2½ to 3½; Frontino and Bolivia, 4 to 4½; Kapanga, 1½ to 3-16ths. La Plata, 3-16ths to 5-16ths; the telegram showing results for August says:—Ore received, 5000 tons; La Plata mine, 1000 tons; ore smelted, 5600 tons; bullion produced, 700 tons; silver produced, 110,000 ozs.; Marbella, 2 to 2½; Mysore, 4 to 4½; New Emma, 4 to 4½; New Potosi, 4 to 4½; Organos, 7-16ths to 9-16ths; Orita, 1 to 1½. Oscar (10s. paid), 11-16ths to 13-16ths. Oscar shaft is being sunk with all speed, and they are finding a good quantity of gold. A large quantity of stuff is prepared for the stamps, and they are looking forward to erecting 20 more stamps this winter. The machinery is being pushed on, and it is expected to be at work this month. Panulillo, 3½ to 4; Quebrada Railway, 3½ to 3½; Richmond, 3½ to 3½; Rio Tinto, 16½ to 16½; Santa and Dunderberg, 4 to 4½; Schwabs, 6 to 6½; Tharsis, 6 to 6½; Tolima, A, 6½ to 7½. United Mexican, 3 to 3½; the excess of returns over outlay in the mine of San Cayetano de la Ovejera for the week ended Aug. 30 was \$7400, and in El Diamante \$300. Victoria Gold, 4s. to 6s.; the report of the meeting held last week at Glasgow will be found in another column. It appears that the notice to the Press was omitted by inadvertence, but as the report was taken by a local professional shorthand writer not connected with the company the delay in publication is the only inconvenience that has resulted. West Callao, 4 to 4½; Western Andes, 4½ to 5.

THE MARKET for MINE SHARES on the Stock Exchange has been almost completely stagnant, and prices are generally easier for the few securities in which transactions have taken place, but as the general markets close better this evening it may be hoped that one long mining shares will participate in the improvement. Metals generally continue dull, and at present rates very few mines can earn profits, whilst the constant crowding of the market with stock, although it is produced at a loss, tends to still further depress prices, and dishearten shareholders. The accounts presented at the Wheal Uny meeting just held showed that they had produced 66½ tons of tin which sold for 2953s., or at a loss of 23s. 15s. per ton all round, and many lead and copper mines are working at similar disadvantage to themselves and to the market. It is, moreover, improbable that any substantial improvement will take place for some time to come, foreign producers being quite prepared to swamp the market, especially with copper and lead, immediately the smallest advance is established. What is required are new applications for the metals, so as to clear off stocks. For zinc, a move in this direction has already been made, for the Americans are adopting white bronze for monumental and cemetery purposes. This white bronze, says a reliable authority, being non-corroding and unchangeable, is equal to gold, silver, or platinum, and superior to copper or antique bronze, which throws off a verdigris. In colour, white bronze is more appropriate than any kind of stone, the latter readily yielding to the action of the frost, and in addition to becoming moss-grown and discoloured, soon shows signs of disintegration. It is rare to find a monument, either marble or granite, free from cracks after 20 years' exposure. These monuments and statuary are cast from refined zinc, and are given their sparkling appearance by the sand blast; sand being blown against the work, under a high pressure of steam, cuts the surface, but does not adhere to it. Aside from their durability, one of the principal advantages over stone is the legibility of inscriptions, which are cast in raised letters and will not crumble or become indistinct. By removable tablets the monuments always present a finished appearance. Tablets not required for inscriptions at time of erection are cast with appropriate emblems to be replaced by inscribed tablets when circumstance require. A thin film of oxide which forms on this bronze is indestructible by the elements. It cannot be dissolved by water, and air cannot penetrate it, though the film is so thin as to be unmeasurable. No corrosion can take place. If some equally good suggestion could be made for applying copper and tin it would no doubt be very beneficial.

Our usual telegram from Cornwall this evening says:—"During the past week the Cornish Mine Share Market has been quiet, but with a steadier and rather more favourable tone. Transactions have generally been confined to a few shares, including Dolcoaths, East Pool, Carn Breas, Tincrofts, West Frances, New Kitty, Cook's Kitchen, and Pednandrea. Of these Agars, Tincrofts, Carn Breas, Cook's Kitchen, and West Frances are stronger, and some amount of attention is being turned to one or two mines now at a low price. At St. Just United meeting a loss of 133s. was reported, increasing the debit balance to 760s. It was not considered necessary to make a call. At Wheal Uny a loss of 1580s. was shown, and a total debit balance of 4696s. A call of 7s. 6d. per share was made. At Redruth yesterday 985 tons of copper ore realised 2591s., the standard advancing 5s.; next sale at Truro, Sept. 18; quantity 2289 tons. Devon Great Consols, 3 to 3½; the monthly sampling of copper ore is 800 tons. Operations have been commenced to sink below the adit level on the Wheal Maria lode, where important discoveries are shortly expected. In a winze at Wheal Emma, below the 235, the lode is worth 3 tons of mineral per fathom, and in the 112, west of engine-shaft at Watson's, it is worth 2 tons of mineral per fathom. Devon Great United, 4 to 4½; an excellent sampling of good quality copper ore has been made in two parcels, computed at 99 tons.

Kit Hill, 4 to 4½; the tunnel level has been driven 10 ft. during the past week, and they are still driving through the lode, which as far as seen is 36 ft. in width. South Devon United, 4 to 4½; the lode at the 120, west of Martin's, is 4 ft. wide, and worth 14s. per fathom. The stope at the back of this level is worth 16s. per fathom. A good sampling of copper ore (estimated at 290 tons) will be made next week.

South Wheal Frances, 7 to 7½; the agents report that the mine continues to look well throughout, and it is said the sales of tin are likely to be considerably increased. Baby, 4 to 4½; there is very little news in the report this week—the bottom drift in the Home Ticket has been advanced 10 ft., and the ore was improving in grade daily. The Lord Byron tunnel has been extended 8 ft., and the tributaries at work in No. 1 cave extracting considerable ore, and the ore body is increasing in size.

In Lead Mine shares the business has been exceedingly limited, the price of the metal continuing to decline. Roman Gravel, 3½ to 3½; about 100 tons of ore have been sampled for sale on Thursday next. Various points of operations are equal to last report, and the mine continues to look well.

The half-yearly meeting of shareholders of the Kimberley Central Diamond Mining Company will be held at the offices of the London agents, on Tuesday next, to receive the report of directors, accounts, and balance-sheet, which was passed at the meeting of shareholders in Kimberley, July 15.

The Bank of Australasia profit for the half-year ended April 14 enables the directors to declare a dividend and bonus equal to 14 per cent. per annum on the capital, to add 10,290s. to the reserve fund, and to carry forward 13,990s. The dividend and bonus will be payable free of income tax on Oct. 3.

The Australian Joint-Stock Bank directors' report, presented at the meeting in Sydney on July 23, states that the net profits for the half-year, after deducting rebate on bills, interest on fixed deposits, paying all charges at head office and 87 branches, and making ample provision for all bad and doubtful debts, amount to 39,322s. 14s. 9d., to which has to be added the balance of undivided profits from Dec. 31, 1883, 2583s. 12s. 3d., making available for distribution, 47,233s. 13s., which was thus appropriated:—Reserve fund, 10,095s.; dividend at the rate of 10 per cent. per annum, 25,000s.; bonus of 2s. per share equal to 2½ per cent. per annum, 625s.; total, 41,250s., leaving a balance to be carried forward of 6332s. 11s. The directors record with great regret the loss by the death of Mr. Vincent Wainwright Giblin, the late much esteemed general manager of the bank. The office thus rendered vacant has been filled by the appointment of Mr. Francis Adams, formerly assistant manager. The death of the late general manager having left his widow without adequate provision, the board, in recognition of his faithful services for 16 years, have intimated to Mrs. Giblin their desire to grant her an annuity of 250s., and they now ask the sanction and confirmation of the shareholders to this course. During the half-year branches of the bank have been opened at Ashfield, near Sydney, and Wardell, on the Richmond river, in New South Wales. The dividend is now payable.

BUENOS AYRES MORTGAGE BANK.—A correspondent of the South American Journal, writing from Buenos Ayres, under date Aug. 2,



The principal matter of interest to-day in Buenos Ayres is the message of the President to Congress, proposing the establishment of a New Mortgage Bank. I hear nothing but unqualified satisfaction expressed about it. It has long been felt that the Mortgage Bank did not fully satisfy the requirements of a highly expensive commerce, and it is to be hoped that the new branch of the National Bank will. It is announced to-day that the Executive will recommend to Congress that a premium be paid on the export of frozen meat. In abolishing the export duties the Government has displayed a tardy wisdom, but this is a step which only the frozen meat companies will applaud."

#### THE SOUTH STAFFORDSHIRE COAL FIELD.

The meeting in the Examination Hall of Mason Science College, Birmingham, on Thursday, was the commencement of the business of the joint excursion to Birmingham and the Black Country of the Chesterfield and Derbyshire Institute of Mining, Civil, and Mechanical Engineers, and of the South Staffordshire and East Worcestershire Institute of Mining Engineers. Mr. A. Sopwith, the President of the latter society, offered a cordial welcome to the visitors from Chesterfield and Derbyshire, and in acknowledging the compliment Lord EDWARD CAVENTISH, M.P., said that it was now 14 or 15 years since the Institute with which he was connected was established, and since that time he believed the meetings that had been held had resulted in so much good that the confident anticipations of the original promoters of the Institute had been fully justified. Many valuable papers had been contributed on various subjects connected with the advancement of mining knowledge, and the discussions that had taken place had been extremely important in regard to the promotion of the science. The object of their society, however, was not only for the advancement of the knowledge of mining, but also for the prevention of accident, and he was of opinion that there was no profession to which the general public were more indebted than that of mine engineering in regard to both those subjects. It was impossible to speak in too strong or warm terms of the great debt of gratitude which he thought everyone in the country must feel was due to those gentlemen who had done so much to render available for general use the great natural resources of this country, and which had been mainly developed by the knowledge and skill of the mining and engineering profession. In addition to that, attention had also been directed over and over again to the means which would render the life of a miner less dangerous than it was. He feared that the mining profession was one which must always entail a considerable loss of life; but owing to the introduction of new appliances of an improved character he hoped that loss would year by year become less. He had that morning been introduced to a gentleman who was risking his life when the lamentable accident took place by which Mr. W. S. Dugdale lost his life at the Baxterley Colliery a few years ago, and he felt sure that many other gentlemen present that day would as willingly risk their lives in the attempt to save men who might be in danger. In conclusion, his lordship pointed out that by excursions from time to time the members saw mining operations carried on under different circumstances from those to which they had been accustomed, and he was convinced that the members from Chesterfield and Derbyshire would be able to learn a great deal by their visit to the Black Country.

There was some discussion on a system of endless rope haulage in use at Clifton Colliery, Nottingham, on the various clutch gears in use, and on a new frictional clutch for hauling engines, and papers were afterwards submitted on safety-lamps by Messrs. Henry Fisher and J. B. Marsaut, and on the mining and geological features of the Black Country by Mr. Henry Johnson, jun., of Dudley. These will be more fully referred to in next week's *Mining Journal*. At the conclusion of Mr. Johnson's paper the members were conducted through the college by Professor Brown, the mining lecturer, and subsequently the Free Libraries and Art Gallery were visited. Later on they were taken over Messrs. F. and C. Osler's glass manufactory, Broad-street; Messrs. Elkington and Co.'s works, Newhall-street; and Messrs. Gillott and Son's pen manufactory, Graham-street. In the evening a dinner was held at the Grand Hotel, Birmingham. Lord Edward Cavendish, M.P., presided, and about 80 gentlemen sat down. The health of "The Queen" having been given and received with three hearty cheers, the vice-Chairman (Professor Brown) proposed "Her Majesty's Inspectors of Mines," calling attention to the most important duties that they had to fulfil.—Mr. EVANS, in response, said he believed the system of official inspection of mines had done much good, although perhaps not so much as the public had expected.—Mr. B. SCOTT also returned thanks, and gave "Success to the Chesterfield and Derbyshire Institute of Mining, Civil, and Mechanical Engineers."—Lord EDWARD CAVENTISH responded, and, in so doing, expressed his regret at not having been able more frequently to attend the meetings of the Institute. Although he was not a man of engineering skill, he felt the deepest sympathy with the engineers who had done more than any other body of men to raise England to its present position. He trusted that, as in past times, members of the profession would achieve great triumphs. He considered the step taken by Birmingham in giving the scholars of ordinary elementary schools the opportunity of studying sciences as one which ought to and would be taken by many other towns in the kingdom. In conclusion, he congratulated those present upon this year's excursion, and proposed "The South Staffordshire and East Worcestershire Institute of Mining Engineers," to which Mr. SOPWITH responded.—The toast of "The Chairman" terminated the proceedings.

#### ROYAL SCHOOL OF MINES PRACTICAL SCIENCE LECTURES.

The copies of the *Mining Journal* containing the reports of the valuable lecture on mining, delivered at the Royal School of Mines by Prof. Warrington Smyth, M.A., F.R.S., in former years, having long been out of print, we have, in order to be able to comply with the frequent request that we would reprint them, or rather print a current series, appointed an additional sub-editor and reporter, who will, with the permission of the professors, give such full and careful notes not only of the lectures on Mining by Prof. Warrington Smyth, but of those on Metallurgy by Prof. Chandler Roberts, &c., as will be useful to students, and of considerable value to those who are engaged in mining and metallurgical work, but have not the opportunity of attending the courses. It is proposed to render the series of reports even more valuable than the last by inserting some of the more important diagrams which the professors may consider essential to the thorough comprehension of the lectures. The prospectus of the courses for the new session of the Normal School of Science and the Royal School of Mines, which is fully referred to in another column, shows that the Council has taken every care to make the curriculum of the utmost utility to all classes of students; and although, of course, no amount of reading can secure the same proficiency as attendance at the lectures, it is hoped that our reports will make the thoroughly practical character of the teaching more widely known, and cause miners of all classes more generally to appreciate the advantages of the School, and the importance of technical knowledge.

OSCAR GOLD MINE.—The manager writes, under date Aug. 29:—"We are going well ahead with our erections. The stamps will be completed next week, and as soon as we get the closing pipes for the steam connection the engine will be ready to work. The large boiler is built in, and the flue and stack completed. We have built another dam, and are making certain cuttings, &c., which in every respect will secure us even more water than we shall require. We are sinking Oscar's shaft with all speed, and are finding a good deal of gold. We have a large quantity of stuff prepared for our stamps; in fact, I am looking forward to the pleasure of erecting 20 more stamps this winter." The shareholders have to be congratulated on the energy and ability shown by their agents. It may be said that the machinery will now be at work in almost a few days. Oscar shaft was already down 60 ft., and it is important to find that the

lode continues rich in depth as the sinking progresses. The large quantity of stuff at surface waiting to be treated shows that there will be no delay in producing considerable results, while the manager even anticipates doubling his operating power very soon. Some of the shareholders are so sanguine that they call attention to the marvellous returns and profits of the renowned El Callao Gold Mine, which gives every original shareholder 1900*l.* per annum on each 100*l.* he invested, and they see no reason why the Oscar Mine should not do likewise. We hope their views are on the eve of being confirmed.

UNITED MEXICAN MINE.—The advices from this property continue good. After providing for heavy outlay upon the works the surplus profit is now upwards of 1000*l.* per week, and the cash in hand amounts to about 17,000*l.*; this is the best answer to the adverse speculators who tried so hard by the free circulation of false news to induce holders to sell. At the price of 3*½* for the 10*l.* shares they are a fair speculation, and should not be regarded in any other light. A very large sum has been expended from the produce of the mine in its development, and now, after 50 years' working, the property by careful management is in a position to pay dividends.—From Mr. William Abbott's Circular.

GOLD COAST MINING COMPANY.—Mr. L. F. Gowans, the manager of this company, who has lately been in consultation with his directors in England, arrived at Axim on July 30, en route for the company's mines at Abontayakon.

TREATMENT OF GOLD ORE.—It is gratifying to call attention to the paragraphs in other columns of to-day's *Journal* re Moon's Amalgamator. In a letter just received from Capt. Dawson, of the Oscar Company, he says that he considers that Amalgamator the best machine made for gold saving.

GAS SHARES.—The principal business in these shares, according to this evening's report of Messrs. W. L. Webb and Co., of the Stock Exchange and Finch-lane, has been:—Bahia (Limited) Ordinary, 24 to 24*½*; Bombay (Limited) 6*¾* to 6*11*/*16*; ditto New, 3*½*; Brentford New Stock, 150 to 151; Buenos Ayres, New (Limited), 12*½* to 12*¾*; Commercial Consolidated, 253; ditto New Stock, 192 to 192*½*; Continental Union (Limited) Original, 35 to 35*½*; ditto New, 1889 and 1872, 25; ditto 7 per cent. Preference, 29*¾* to 29*¾*; Crystal Palace 6 per cent. Preference, 161*¾*; Gas Light and Coke, A. Ordinary, 219 to 221; ditto, H, 7 per cent. Maximum, 149; ditto 4 per cent. Debenture Stock, 109 to 109*½*; ditto 6 per cent. ditto, 161*½* to 162; Imperial Continental, 202 to 203; Monte Video (Limited), 17*¾*; Rio de Janeiro, 23*¾* to 24*¾*. Gas stocks, London companies unchanged, the Preference Debentures all firm; foreign companies also firm.

INSURANCE SHARES have, according to this evening's report of Messrs. W. L. Webb and Co., of the Stock Exchange and Finch-lane, been dealt in as follows:—Atlas, 13*¾* to 14; City of London Fire (Limited), 5*½*; Fire Insurance Association (Limited), 12*½*; Indemnity Marine, 14*¾* to 14*¾*; London, 5 to 5*½*; Law Fire, 16*¾* to 16*¾*; Marine (Limited), 29*¾* to 29*¾*; North British and Mercantile, 27*¾*; Phoenix, 225 to 228; Rock Life, 73*¾* to 74*¾*; Universal Life, 40*¾* to 41. Alliance Fire and Life, Phoenix, and most of the old companies show an improvement; others unchanged.

TRAMWAYS.—The closing prices of this evening, as quoted by Mr. Wm. Abbott, of Tokenhouse-yard, are given in tabular form in the last page of the *Journal*.

GOLD AND SILVER.—Messrs. FIDLEY and ABELL (Sept. 4) write:—"Gold continues steady at last quotations. The arrivals are small, and include 25,200*l.* from West Indies, 24,400*l.* from Calcutta, 2000*l.* from the Cape, and 11,700*l.* from Chili = 63,300*l.* The bank has received 45,000*l.*, and has lost 27,000*l.* for export to Egypt. The bank takes this amount to Alexandria, and another 25,000*l.*, in bars, to Bombay. The silver by the Havel was fixed at 50*½* *l.*, and this rate was current until to-day, when with rather more demand, the supply by the Chili steamer was sold at 50*¾* *l.*. Since last week the chief arrivals have been:—From Buenos Ayres, 53,700*l.*; West Indies, 3800*l.*; New York, 48,840*l.*; Chili, 26,300*l.* = 132,640*l.*, while the exports are 118,500*l.* to Bombay. Mexican dollars are slightly steadier in price, and the arrivals are few. From New York, 64,000*l.*, and Vera Cruz, 27,000*l.* = 34,000*l.* The quotations for bullion are:—Bar gold, fine, 77*½*. 9*½* *l.* per oz., standard; bar gold containing 20 dwts. silver, 77*½*. 11*½* *l.* per oz., standard; bar silver fine, 50*¾* *l.* per oz., standard; bar silver, containing 8 grs. gold, 51*¾* *l.* per oz., standard; cake silver, 51*¾* *l.* per oz.; Mexican dollars, 49*¾* *l.* per oz.; quicksilver, 5*l.* 10*½*; discount, 3 per cent.

WASSAU (GOLD COAST).—The directors report that the progress of the works has proceeded favourably on the whole, though impeded by the heavy rains which followed upon an unusually long drought; the fall was nearly 17 in. in the month of May, and in the first week in June it marked an average of 3 in. per diem. This caused some anxiety, and extra expense had to be incurred to get rid of the water; fortunately only slight damage was done, but the output of ore was naturally affected, and the quantity being crushed up to June 22 was below the manager's minimum estimate of 10 tons per day. Driving the deep adit has been extended to within 120 ft. of the lode, its importance has been before dealt upon; when completed not only will the output be augmented and the mine effectively drained, but it will afford any easy and short transit of ore to the crushing mill. As regards the value of gold produced the increase is considerable, though for the present below requirements to meet cost or leave a surplus, also far below the reasonable expectations of the future. In the revenue account of 1883 the amount received for gold sold in that year was—1814*l.* 15*½* 3*l.*; in the first six months of the present year (1884) it has been 1805*l.* 16*½* 2*l.*; and (on Aug. 5) for a remittance which left the mines (June 25) in addition, 431*l.* 3*½* 5*l.* The average yield of gold per ton of stone remains about the same as before. The native labour force has been reduced from 250 to 170; this is still above the manager's estimate, but it will be no doubt soon further reduced. The expenditure on mine working account for the six months has been necessarily heavy, averaging 625*l.* per month, owing to the large amount of dead work still going on. A remittance of gold was received on Aug. 26. The mining captain's report of July 14 is favourable as regards the work generally, looking for early better progress in the deep adit, and hoping soon to be in a position to raise an increased quantity of ore.

At Redruth Ticketing, on Thursday, 985 tons of ore of 6*½* average produce, and containing 63 tons 6 cwt. of fine copper, were sold for 2591*l.*, being 2*l.* 12*½* 6*l.* per ton of ore, 8*½* 0*l.* per unit, or 40*l.* 3*½* 6*l.* per ton of fine copper in the ore, and an average standard of 83*l.* 15*l.*. Subjoined are the particulars of the two last sales.—

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Aug. 30—Foxdale.....	100	.....	£ 8 16 6	Sheldon, Bush, and Co.
Sept. 4.....	985	.....	2 12 6	3 0 ½

Compared with the last sale the advance has been in the standard 5*l.*, and in the price per ton of ore about 4*l.*. The sales and amounts realised were—Mellancare, 632 tons, 1383*l.*; New Cook's Kitchen, 128 tons, 415*l.*; South Tolcarne, 97 tons, 363*l.*; West Seton, 47 tons, 159*l.*; Wheel Coates, 42 tons, 151*l.*; Camborne Veau, 39 tons, 118*l.*

**LEAD ORES.**

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Aug. 30—Foxdale.....	100	.....	£ 8 16 6	Sheldon, Bush, and Co.

**BLLENDE.**

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Sept. 2—Cwmystwyth.....	100	.....	£ 2 12 6	Villiers Spelter Co.

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## Notices to Correspondents.

**CENTRAL WYAND GOLD MINING COMPANY.**—As a regular reader of the *Mining Journal* I should be pleased to learn through its columns if the liquidation of this company is yet completed and shall also be glad to know who is the liquidator. —R. F.: Glasgow.

**MINER'S INCH—SHAREHOLDER (City).**—The miner's inch varies in different localities, and we do not know what standard has been adopted in the Transvaal—probably the most usual = 623 American gallons, or about 520 English gallons per hour, or 12,480 gallons in the 24 hours. The weight of this would be 8 tons. In hydraulic mining about 17 tons of water are required to bring down 1 ton of rock, so that 3 miners' inches equal 1 ton, hence 200 miners' inches per day ought theoretically to bring down 66 tons per day, but in practice it does not do so, owing to stoppages, waste, and other causes which, of course, vary.

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**Received.**—"C. E." (St. Day): The *Mining Review*, quarterly supplement to the *Mining Journal*, was discontinued about 45 years since. We have no copy of the volume for 1839, and do not know where you could obtain it—"A. H." (Lunatic Asylum, Lancaster): If you accept the recommendations in such circulars as those you mention you need have no doubt as to the result; you must surely understand that the heavy expenses of "circular mining" is not incurred without the intention of realising correspondingly heavy profits. If the "circular men" sold at market prices they would never cover cost of printing and postage. Any respectable dealer will supply you at the lower prices mentioned—"E. J." (Pontypool): You can only communicate through the *Mining Journal*—"W. A." (Aberdeen): No charge whatever is made for the insertion of such information, but it must be authenticated by the name of the writer—"A.": Manuscripts rejected for want of verification are not preserved—"G. S." (Pateley Bridge): Too personal. Refer to the mine you ment on rather than to village feuds in another district—"J. S. P." (New York): Inserted.

# THE MINING JOURNAL, Railway and Commercial Gazette.

LONDON, SEPTEMBER 6, 1884.

## CANAL VERSUS RAILWAY TRAFFIC.

The important question of materially increasing the water-power of the country by means of internal canals for the conveyance of minerals and heavy traffic is rapidly coming to the front. Our chief arterial railways are taxed to the utmost of their power in giving despatch to the present enormous trade; and the delays which now take place in the transit of goods in some of our busiest centres of manufacture are serious and inconvenient. It is well understood that the directors of some of our principal lines have it under consideration to lay down a double or distinct line over their whole system for the carriage of minerals and goods, keeping this trade altogether separate from the passenger traffic. It is obvious that should such be the case it would have many advantages, not only materially expediting the transit, but conducing to the safety of passengers, by removing that prolific source of danger—the collisions caused by the shunting of empty goods trucks and wagons on passenger lines. Whether the laying down of a mineral and goods rail over our present systems be universally adopted or not, it must be patent to all who give the subject any consideration that steps must shortly be adopted to provide more expeditious and also cheaper modes of conveyance for ever-increasing trade in our chief centres of manufacture.

During the investigation before the Select Committee of the House of Commons on railway rates and fares a good deal of important evidence was given by various manufacturers in favour of canals. It was pretty conclusively proved that, economically constructed and properly managed, they would be able to convey minerals and heavy goods traffic at rates which would be altogether out of the power of our railways to compete with. Canals should, according to most reliable authorities, be able to carry coals and heavy traffic at one halfpenny per ton per mile, whereas it is too well known that railway charges are far more than double that sum, exclusive of those vexatious and undefined and undefinable extortions, "terminal charges." We are quite aware of the fact that serious and numerous complaints were made before the Railway Commissioners as to the working of several canals, and the delays thereon were most inconvenient; but if these complaints were proved to the foundation, in all probability they would be found to result from the fact that the canals are in the hands of the railway companies who, of course, neglect the canals in order to divert the trade to the railways. Wherever a canal has been carried out and worked independently it has proved a most formidable rival to the rail in the carriage of minerals and heavy goods and those other conveniences of traffic which are so essential to commercial life. But these canals should never be allowed to fall into the hands of the railway companies. This is the great mistake which has hitherto been made. The railway interest has now become so immensely influential and wealthy as to be able to maintain the monopoly of the carrying trade of the kingdom in their own hands, and to buy up many of those canals which formerly did good service in the internal traffic of the country. Parliamentary aid should be invoked in order to prevent the swallowing up of canals by railway companies unless the most rigid tariffs for carriage were expressly laid down, and then special care should be taken that there were no "loop-holes" by which the railway companies could avoid their responsibilities.

It is pretty generally understood that the promoters of the Manchester Ship Canal Bill will again try their fortune before the Parliamentary Committee next year. Probably, however, the scheme will be of more modified dimensions, and, consequently, will have a far greater chance of success. As a proof of the immense value of the scheme to the manufacturers and merchants of the district more immediately interested, it will be remembered when the preamble of the Bill was declared by the Lords Committee as proved provided that one-half of the required capital should be raised before the cutting of the first sod, the whole required sum (five millions sterling) was raised within a few hours. The Bill did not pass through its subsequent stages; but we can scarcely believe that all the enthusiasm of the wealthy capitalists of Manchester and the inland districts has already died out, and we may expect, therefore, to see the Bill again launched with every probability of success. Should such be the case it will be of almost national importance, as it will assuredly be speedily followed with other schemes for internal navigation, and our trade and commerce materially benefited by substantial reductions in freights consequent upon the healthy competition evoked. Our Continental railways are not heavily taxed in the conveyance of minerals and goods, one of the principal reasons being that they make far more use of water-power than England, and canal navigation is one of the most used. It can scarcely be doubted that should good canal communication be opened up from our great mining districts to our chief commercial centres, that double the amount of coal could be easily conveyed, to the mutual advantage of both the consumer and the producer; in fact, it has been alleged that with adequate facilities for the carriage of coal between the

South Wales coal basin and London coal could be profitably sold in the Metropolis at 20s. per ton.

The Manchester City Council proposed a bold but perfectly justifiable and legitimate step at its meeting last week. A special committee reported that, having given the question the most careful consideration, they recommended that the Council should contribute to the extent of a rate of 2d. per pound on the rateable value of the city in the event of the Ship Canal Bill again coming before the Parliamentary Committee. The public have no idea of the immense cost of the expenses which a stubbornly-fought contest before the Parliamentary Committee involves. It was alleged at the time (and not contradicted) that the cost of the Barry Dock Scheme, so vigorously opposed by the Marquis of Bute, the Taff Vale Railway, and other wealthy proprietaries, was something like "5 guineas a minute for the whole 43 days the Bill was before the Committee." The Manchester Ship Canal Bill must have been but little less. It must be patent to all that such costs are almost ruinous to any private individuals; and although the promoters of the scheme would unquestionably derive the greatest direct advantages from its successful completion, yet it would confer such immense indirect benefits to every ratepayer of the city that the Council may justly be asked to contribute some substantial amount to bring about so desirable a result. We are glad to find the report of the committee was agreed to by the Council, for the promoters of the Bill will thereby secure both pecuniary and moral support, which will do much to achieve success. The committee in their report very properly adverted to the present unsatisfactory mode of conducting private bill legislation, and the enormous expenses incurred. The suggestion that a single enquiry before a joint committee of both Houses of Parliament is a good one, and commends itself to the common sense of the nation. Upon all grounds, therefore, the manufacturing and commercial classes of the kingdom watch with keenest interest the progress of this important scheme, not only because of the direct benefits which will result therefrom to those more immediately connected, but for the important collateral issues which will result therefrom, and because it will tend to solve the long-vexed question in reference to railway *versus* canal carriage of minerals and goods.

## THE CONSUMPTION OF FUEL IN THE PRODUCTION OF IRON.

Since pig-iron was first made with coal the efforts of the makers have been increasing in endeavouring to find a means for minimising the consumption of fossil fuel in their furnaces. For a very long time indeed not much success attended these efforts, for not much attention was paid to the height and construction of the furnaces, which it was found in after years had a great deal to do with the consumption of fuel in the smelting of the iron. Indeed it is only in comparatively recent years that the waste gases have been utilised in some districts, whilst in many they are still allowed to ascend into the air, injurious alike to health and vegetation. And this is more especially the case in districts which are at a considerable distance from any coal field, and where one would think the increased cost of coal would be matter for serious consideration. On the other hand, in the Cleveland iron-making district, which is contiguous to the great Durham coal field, the ironmasters, with marked persistence, and at a considerable outlay, in connection with scientific appliances and experiments, have succeeded in bringing down the consumption of coal for the production of iron to a very low point indeed; and this, too, with what may be considered as a comparatively poor quality of ironstone, which does not give an average of quite 30 per cent. of metallic iron.

Mr. I. Lowthian Bell, one of the first authorities, in his evidence before a Parliamentary Committee, and in speaking of the Cleveland district, said—"I believe the district with which I am connected has led the way to the economy of fuel in the blast-furnaces; and in support of that I may say that since the year 1864 we have reduced the consumption of coal to produce a ton of pig-iron from 70 cwt. down to 41 or 45 cwt., which shows a saving of something like 40 per cent., and as the total quantity of pig-iron made in our district is something like 2,000,000 tons per annum, if we were producing the present make of pig-iron in the old way we should require for it 3,500,000 tons more coal than we use at the present moment." But since the above evidence was given the Cleveland iron-makers have worked hard to still further reduce the quantity of coal required for turning out a ton of pig-iron, and in this they have been successful. Yet we find that in other districts, where the ironstone is much richer in iron than that in Cleveland, from 20 to 40 per cent. more coal is used. This too, as we have before stated is the case in districts where the cost of fuel is more than 20 per cent. higher than it is in the North of England, or in what is known as the Cleveland district.

How the fuel is economised in the smelting of iron, and where evidently but little attention is paid to the subject, will be seen from the following figures, showing the quantities of coal used in the smelting of a ton of iron in 1872 and 1883:—

	1872.	1883.		1872.	1883.
Cleveland .....	Cwts. 45	42	Nottinghamshire .....	60	44
Cumberland .....	48	39	Shropshire .....	60	59
Derbyshire .....	60	59	Wiltshire, &c. ....	45	41
Durham .....	47	40	Worcestershire .....	52	50
Glamorgan-shire .....	42	40	Yorkshire, W. Riding ..	60	51
Monmouthshire .....	49	39	South Staffordshire ..	56	41
Lincolnshire .....	50	42	North Staffordshire ..	49	40
Northamptonshire ..	50	47	Lancashire .....	37	36
Northumberland .....	56	42	Scotland .....	49	44

It may be said that the ores of Cumberland, Lancashire, and some other districts where little fuel is required are hematites, some of them giving as much as 60 per cent. of metallic iron. The coal used in the production of pig-iron in Great Britain for the years from 1874 to 1883 was as follows:—

	1874.	1883.		1879.	1883.
.....Cwts. 52			.....	44	
1875 .....	51		1880 .....	44	
1876 .....	48		1881 .....	43	
1877 .....	47		1882 .....	42	
1878 .....	45		1883 .....	41	

The above shows a most satisfactory and interesting decrease from year to year.

## MINERS AND THEIR GRIEVANCES.

It is a healthy sign to find the working miners taking the initiative in endeavouring to remedy grievances which they consider they are suffering under, apart from the wages and similar questions, and in opposing everything that is calculated to endanger their safety whilst following their employment. Of this we have had some striking examples during the last few days. Even the action of Mr. Burt, M.P., the parliamentary representative of the miners, and the one considered best acquainted with their desires and requirements, has been seriously taken to task and found fault with. The Member for Morpeth was asked to support a memorial forwarded to the Home Secretary by the Miners' Auxiliary Union (Yorkshire) asking for a special enquiry into the cause of the explosion which took place at the Wharfedale Colliery in October last. Mr. Burt, in his reply, states that he did all he could in the matter and regretted that the Home Secretary did not agree to the special enquiry asked for. This was considered anything but satisfactory, and the secretary of the Association, who writes to Mr. Burt, says the Association does not think his answer satisfactory, and considers he did not press the question on the attention of the Home Secretary with sufficient persistency.

Far more important, however, is the action taken by the miners employed at the Darfield Main Colliery, one of the largest in the South Yorkshire district, with respect to the use of powder and shot firing—the most fertile source of explosions. The men found that a new staple pit was being driven to the coal 40 yards below the place they were working in, and that the gas was found in sufficient quantities to extinguish the safety-lamps. This appeared to be all the more dangerous from the fact that the place was only supplied with the return air, which, of course, would be most impure, being impregnated with the gas it was intended to sweep away. Yet under

such circumstances the men averred that shot-firing was carried out whilst the miners were working in the pit. Such being the case, the men believed their lives were not safe, and accordingly refused to continue working until the shot-firing was discontinued, or effective steps were taken to remedy the evil complained of. Accordingly the complaint was brought under the notice of the executive of the Miners' Association, and the complaint was thoroughly gone into on Thursday last. The deputation of the workmen reported that they had informed the managers that the men protested against blasting being carried on in the "return" airway, and he "pooh-poohed" the matter, and said the men had no cause for the action they had taken.

He also stated that the men had allowed other two drifts to be proceeded with until one was finished and the other nearly so, without making any objection. The answer to this was, that the air was sent down direct, and was, therefore, pure. The agent of the Miners' Association, who was present, said the action of the manager was the most flagrant breach of the law he had known for a very long time, and ought to be exposed. This cannot be questioned, for the firing of shots under such circumstances is strictly prohibited in the first section of the Mines Regulation Act. After some further discussion the representatives of the men suggested that the shot-firing should only be done when the men were out of the pit, one of the men remarking that the district in question had not been safe for some time during the last six months, without the additional danger of shot-firing. The suggestion with respect to the firing taking place only when the men were out of that part of the mine when it was required was then agreed to. Were the miners generally to adopt a similar course to that alluded to by those in the South Yorkshire district, our miners would be much safer than they are, as agitators would find their occupation gone, and further legislative interference in connection with mining would be altogether unnecessary.

## SCOTCH PIG-IRON WARRANT MARKET.

Mr. W. WILSON (Glasgow, Sept. 4) writes:—The warrant market has been dull this week, and the price is lower. The special features in the trade at present is the small shipments. Week after week they are considerably short of last year, and the total decrease as compared with 1883 is now 67,000 tons. The production has been reduced by about 4000 tons per week, whereby an equilibrium between supply and demand has been pretty well maintained. One furnace has been put out at Ardeer, making the number blowing 94: 70 tons were taken out of store here last week, while 366 tons were taken out at Middlesbrough. Business was done during the past week at the following prompt cash prices:—

Following prompt cash prices:—			
Thursday, Aug. 28.	Friday, Aug. 29.	Monday, Sept. 1.	
41/3%, 41/4, 41/5%, 41/6 ...	41/4, 41/5% ...	41/3, 41/4	
Tuesday, Sept. 2.	Wednesday, Sept. 3.	Thursday, Sept. 4.	
41/4%, 41/5, 41/6%, 41/6	41/5%, 41/6, 41/7% ...	41/7, 41/4, 41/5%, 41/6	
	1883.	1882.	
Price of Scotch Warrants, Sept. 1.	41/3%	46/10%	
Furnaces in blast in Scotland do. ...	94	114	
Iron in store at this date .....	585,872	585,240	
Shipments of Scotch pig-iron for {			
week ending Aug. 30 .....	9,529	15,683	
Do. since beginning of year .....	374,758	442,833	
Price of Middlesbrough, No. 3, Sept. 1	46/4%	39/	
Furnaces in blast Middlesbrough dist.	99	118	
Middlesbrough Iron Imported at {			
Grangemouth, week ending {	3,980	4,770	
Aug. 30 .....		4,206	
Do. do. since beginning of year .....	172,475	175,345	
		151,041	

## LEAD PRODUCTION IN GERMANY.

	1881.	1882.	1883.
Mechernich Mining Co. ....	22,405	25,065	25,583
Stolberg Mining Co. ....	13,996	14,919	13,763
Rhenish Nassau Mining Co. (Eschweiler) ..	7,200	6,339	6,487
Commern Mining Co. ....	2,362	2,700	1,640
A. Poensgen and Sons (Herbst and Co.) ...	3,189	3,100	3,540
Remy Hoffmann and Co. (Emser Hütte) ...	5,772	5,803	5,217
S. B. Goldschmidt (Braunbach) .....	2,721	3,176	3,187
Giesche's Erben .....	5,489	5,858	6,154
Prussian Government Mines, Tarnowitz ...	8,450	8,683	9,561
do do do Harz .....	9,852	11,026	10,348
Saxon Government Mines, Freiberg .....	4,494	5,064	5,274
Rothenbach Smelting Works .....	55	40	44
Total .....	85,989	91,763	89,767

JULIUS MATTON,

London Agent Mechernich Mining Company, Mechernich, Rhenish Prussia.

**A NEW INDUSTRY IN STAFFORDSHIRE.**—The introduction of machine-made horsenails into this country dates back some 10 or 12 years, and they have taken a firm hold upon the market; but it is a noticeable fact, says the *Ironmonger*, that English manufacturers have been very backward in developing this trade, and have hitherto allowed it to remain to a great extent in the hands of American and continental competitors. Much as we appreciate all improvements in manufactures, especially such as give a better article at smaller cost, we must all regret to see trade going away from our own country; and we are glad to note that an extensive works for the manufacture of horsenails has just been started very close to the old seat of the hand-made horsenail trade. The works we refer to are those of the Whittington Patent Horsenail Company, at Kinner, near Stourbridge, with the very suggestive and thoroughly English trademark "Newmarket." It is stated that the nails are being manufactured from the very best brands of Swedish charcoal iron. In shape they much resemble hand-made nails, and, it is alleged, are reliable, being of one uniform pitch, stiffened from middle to point, and of precisely the same grade in head and shank. The nails are made and pointed without being subjected to any heat, and from the samples we have before us tested in various ways, we should judge them to be of excellent quality. It is a well-known fact that the cost to the shoeing-smith of preparing hand-made nails for use is equal to something like 20 per cent. of the price, which is entirely saved in these nails, apart from their superiority in other respects.

**SERIOUS CHARGE AGAINST A WORKS AGENT.**—At the Swansea Petty Sessions, on Tuesday last, Mr. Edward Player was brought up in custody on remand, charged with having stolen the money of his employer, the Messrs. Vivian and Sons, of the Hafod Copper Works. The case created intense excitement in consequence of the high social position of the defendant. He is churchwarden of the parish church, a "blue ribbonite," and has for years past taken a prominent part in most of the religious and social questions of the day. The Court was densely crowded, Sir H. Hussey Vivian, Bart., M.P., Graham Vivian, M.P., and the Misses Vivian being present. The prisoner felt his position most acutely. Only one charge was gone into, and that was a very simple one. The prisoner was charged with stealing the sum of 37l. 10s., the property of his employers. As a confidential clerk the defendant received on the first day of each month an amount of money with which to meet the payments on account of the Clyne and Singleton estates. During the month of June last he received the sum of 255l. 17s. 1d., and so manipulated the accounts that he only paid 37l. 10s. less than the amount which he accounted for to the clerk when he settled at the end of the month. This was the specific charge now proceeded with. Mr. W. R. Smith, solicitor, who appeared for the prisoner, pleaded "Guilty," expressing his deep regret, and offering to make every reparation in his power, by giving up his property to cover the defalcations. Mr. Abel Thomas, barrister, who appeared for the prosecution, said Sir Hussey Vivian, Bart., had only brought the case forward as an act of publicity—he felt bound to prosecute in such a breach of trust, but he had no desire to press for a heavy sentence. The Stipendiary made an impressive address to the prisoner, saying that the degraded position in which he stood, his fall from his high social position was a heavy punishment in itself, but the Court felt bound to inflict the highest sentence in its power—six months hard labour. The prisoner was then removed, crying bitterly.



## NORMAL SCHOOL OF SCIENCE, AND ROYAL SCHOOL OF MINES.

In connection with the discussion which recently took place in the Mining Journal with reference to raising the Normal School of Science and Royal School of Mines to the rank of a university there are some observations in the inaugural address of Lord Rayleigh at the Montreal meeting of the British Association for the Advancement of Science which are well worthy of careful consideration. He remarked that just as there are some brilliant literary men with an inability, or at least a distaste practically amounting to inability, for scientific ideas so there are a few with scientific taste whose imaginations are never touched by merely literary studies. To save these from intellectual stagnation during several important years of their lives is something gained, but Lord Rayleigh doubts whether an exclusively scientific training would be satisfactory, and where there is plenty of time and a literary aptitude, he can believe that Latin and Greek may make a good foundation; but, he says, it is useless to discuss the question upon the supposition that the majority of boys attain either to a knowledge of the languages or to an appreciation of the writings of the ancient authors. The contrary is notoriously the truth, and the defenders of the existing system usually take their stand upon the excellence of the discipline. In after life the sciences are usually engrossed with business, and no further opportunity is found for attacking the difficulties which block the gateways of knowledge.

Now for the mere purpose of intellectual discipline it would be almost unsafe to deny that the four classes forming the mathematical course at the Normal School of Science and Royal School of Mines are less effective than ordinary college courses in Latin and Greek, so that there is no valid reason why the intellect should be less disciplined when studies are pursued at South Kensington instead of in the orthodox classical schools. It is explained in the Prospectus of the School for the session which commences next month that the instruction is arranged in such a manner as to give the students a thorough training in the general principles of science, followed by advanced instruction in one or more special branches of science. The Associateship is granted in certain divisions or lines of study. Students who go through any one of the prescribed courses of instruction in the pre-cribed or pass the necessary examinations receive a Certificate of Associateship of the Normal School of Science or of the Royal School of Mines. But students who are not candidates for the Associateship are permitted to take up the course in one or more special branches of science, and on passing the examination receive a certificate to that effect. Although the school is primarily intended for science teachers and students from the science and art classes the curriculum affords every facility for the acquisition of the necessary scientific knowledge by those desiring a purely utilitarian course of scientific instruction for practical industrial purposes. The Associateship of the Normal School can be obtained in one or more of the divisions of mechanics, physics, chemistry, biology, geology, or agriculture, and the Associateship of the Royal School of Mines in metallurgy or in mining. During the first two years the course of instruction is the same for all divisions, after which it is specialised, so as to suit the requirements of individual students.

In the first term of the first year all divisions are required to take chemistry, part I, in the first term; mechanics and mechanical drawing, part I, in the second term; and mathematics and freehand drawing throughout both terms. In the second year all divisions take physics, part I, and the elements of astronomy in the first term; geology, part I, including mineralogy in the second term, and instruction in mathematics as far as may be necessary, and in geometrical drawing throughout both terms. In the third year special courses are attended, according as the student elects to pass in mechanics, physics, chemistry, biology, geology (continued into the fourth year), agriculture (ditto), metallurgy, or mining. Examinations are held at the end of each course of instruction, and at such other periods as may be found necessary. On the results of these examinations the successful candidates are arranged in two classes, first and second. There are also "Honours" examinations for the subjects of the third and fourth years, the successful candidates being placed in order of merit. A student obtains the Associateship who passes in all the subjects of the first two years and in those of the special division he selects for his Associateship. A student who goes through the prescribed course of instruction in any subject and passes the final examination in it receives a certificate to that effect. There is an abundance of encouragement to students in the shape of Royal Exhibitions, National Scholarships, and Free Studentships. These are competed for at the annual science examinations of the department. There are 12 Royal Exhibitions, four open each year; 36 National Scholarships, 12 open each year, tenable at the option of the holder at either the Normal School of Science and Royal School of Mines, or the Royal College of Science, Dublin; and 18 free studentships, six open each year. The Royal Exhibitions are of the value of 50*l.* a year, with free admission to lectures and laboratories during the course for the Associateship, about three years. The National Scholarships are of the value of 30*l.* a week during the session of about nine months in the year, with second-class railway fare to and from London or Dublin, and free admission to lectures and laboratories during the course for the Associateship. The Free Studentships give free admission to the lectures and laboratories during the course for the Associateship. The Royal Exhibitions and Free Studentships are open to all British subjects. The National Scholarships are only open to students of the Industrial classes. All the Exhibitions, Scholarships, and Studentships are held on the condition that the holder attends the courses of instruction regularly, complies with all the rules laid down for his guidance, and passes the examinations required for the Associateship. Local Exhibitions and Science teachers in training are not eligible for Royal Exhibitions, National Scholarships, or Free Studentships. Free instruction is given to Local Exhibitions. Four Scholarships of 15*l.* each are given to the students who have gained the greatest aggregate of marks in the examinations of the first year; and two scholarships of 25*l.* to those pupils who have gained the greatest aggregate of marks in the examinations of the first two years. These Scholarships are held on the condition that the student attends the courses of instruction regularly, is examined, and passes satisfactorily. Two Scholarships of 50*l.* each tenable for one year only, will be rewarded to two students in the chemistry classes who take a high place in the final examinations of the session, and who are otherwise in the opinion of the council well qualified. The holders of these Scholarships will be required to teach in the chemical laboratories during the ensuing session. The trustees of the Edward Forbes Memorial Fund present a bronze medal and a prize of books to be awarded to the student who does best in biology. The Marchison medal and prize of books, the gift of the late Sir Roderick Marchison, is awarded annually to the student who does best in geology. Prof. Tyndall, having presented a sum of 100*l.*, the interest of which is to be given as the Tyndall prize, books to that value are awarded to the student who does best in physics, part I. The De la Beche bronze medal, established in memory of Sir Henry De la Beche, is awarded annually to the student who does best in mining. The Bessemer bronze medal, given by Sir Henry Bessemer, is awarded annually to the student who does best in metallurgy; and in addition books to the value of 5*l.* are presented by Prof. Chandler Roberts. Prof. Hodgkinson offers the Hodgkinson prize, a prize of books or apparatus to the value of 5*l.*, to the best student in chemistry, and a copy of his book on Organic Chemistry to the next best. And the Frank Hatton prize, in memory of the late Frank Hatton, a student of the school, will be given to the student who does best in organic chemistry. As the subscription

Although French and German are not included in the School of Science course there are such abundant facilities for studying those subjects in London that their omission is by no means regrettable, and altogether Lord Rayleigh's view of a satisfactory substitute for classical education would seem to be fairly met, for, in concluding his address, he remarked that he believed that French and German if properly taught, which he admitted they rarely are at present, would go far to replace Latin and Greek from a disciplinary point of view, while the actual value of the acquisition would in the majority

of cases be incomparably greater. In half the time usually devoted without success to the classical languages most students could, he says, acquire a really serviceable knowledge of French and German. History and the serious study of English literature, now shamefully neglected, would also find a place in such a scheme. There is one objection often felt to a modernised education as to which a word may not be without use. Many excellent people are afraid of science as tending towards materialism. That such apprehension should exist is not surprising, for unfortunately there are writers, speaking in the name of science, who have set themselves to foster it. It is true that among scientific men, as in other classes, crude views are to be met with as to the deeper things of Nature; but that the life-long beliefs of Newton, of Faraday, and of Maxwell are inconsistent with the scientific habit of mind is surely a proposition which I need not pause to refute. It would be easy, however, to lay too much stress upon the opinions of even such distinguished workers as these. Men who devote their lives to investigation cultivate a love of truth for its own sake, and endeavour instinctively to clear up, and not, as is too often the object in business and politics, to obscure a difficult question. So far the opinion of a scientific worker may have a special value, but I do not think that he has a claim superior to that of other educated men to assume the attitude of a prophet. In his heart he knows that underneath the theories that he constructs there lie contradictions which he cannot reconcile. The higher mysteries of being, if penetrable at all by human intellect, require other weapons than those of calculation and experiment. Without encroaching upon grounds appertaining to the theologian and the philosopher, the domain of natural science is surely broad enough to satisfy the wildest ambition of its devotees. In other departments of human life and interest true progress is rather an article of faith than a rational belief; but in science a retrograde movement is, from the nature of the case, almost impossible. Increasing knowledge brings with it increasing power, and great as are the triumphs of the present century we may well believe that they are but a foretaste of what discovery and invention have yet in store for mankind.

## REPORT FROM CORNWALL.

Sept. 4.—A more barren week in the way of mining intelligence it would be difficult to imagine. There is no topic at all of general interest in mining circles if we except the one which is always more or less to the front—the price of metals, and upon this it seems impossible to obtain any really valuable consensus of opinion. That the tin standards have been officially dropped is, of course, a fact upon which there can be no doubt, but it took no one by surprise, and nobody seems to know what is to come next. According to precedent this is just the time when an advance in the price of metals may be looked for, but while we are told on one hand that this will probably be the case, on the other we are assured it is likely to see a lower figure before there will be anything like a substantial recovery. With matters in this position we are likely, therefore, to have a new development of "hand to mouth" policy, and to see operations carried on on the most restricted scale. And that, of course, will lead to uncertainty and unsteadiness, and have itself a tendency to keep prices down. The immediate prospect, therefore, at the best is doubtful.

We do not imagine, however, the course of events will be much influenced by the discoveries of tin reported from the United States. If true they would, of course, be serious; but on the face of it the statement in the Pioneer Dakota Press, with its array of unknown authorities, is written by an uninformed man. The writer who is careful to explain that while "stream tin" has been occasionally found in no instance has "tin ore cassiterite" been discovered, is ignorant of the very A B C of tin mining, or he would know that the "stream tin" and the "tin ore," which he distinguishes, are one and the same, both cassiterite, though commonly varying in quality as well as in locality. They are the same mineral precisely, only one is found in alluvial deposits and the other in lodes. The Dakota gentleman who has announced the wonderful discovery to the world is evidently in absolute ignorance of this simple fact, and it is clear, therefore, that he is writing about what he does not understand. If he is to be accepted as the original authority for the story it need hardly in its present form trouble us much, and if he is merely the mouthpiece of others it is a pity for their own sakes they did not warn him that the rock on which his frail barque has been driven, and coach him better in details. If there is anything more to hear it will not be long coming over.

It remains to be seen whether Mr. Bolitho's Dolcoath award will be regarded as satisfactory all round; while considerably less—728*l.* 10*s.*—than the assessment made it recognises the principle on which it was based, and probably this will be regarded as a fair way of meeting the question; but the matter may be regarded by any individual ratepayer as an agreement, notwithstanding while the hands of the adventurers are tied.

## REPORT FROM DERBYSHIRE AND YORKSHIRE.

Sept. 4.—The Coal Trade of Derbyshire is now looking rather better than it did, so far as the quantity going away is concerned; but the prices have in no way improved, and are as low as they have been during any period of the year, if in some instances they are not less. At Ripley a number of miners have been on strike against a reduction, and the owner, Mr. Mundy, appears to be indifferent as to working his pits unless he receives some little benefit in so doing. In a letter addressed to the men he states that he has had some idea of handing over his mines to a limited company, although he blames the limited companies for bringing down the price of coal, in consequence of having to produce a large amount of coal so as to meet the constantly recurring liabilities. But it must be allowed that the seasons, more than limited companies, have to do with the price of coal. During summer, with a limited demand for house coal and with plenty of competition for what trade there is, prices must necessarily be low, whilst in winter it is just the reverse.

During the summer the railway companies could give some little relief, for at one time it was usual to have what was termed a winter and a summer rate, but this is not the case now, for the charge has been the same all the year round. Next year, however, will most likely see a change, for there will be a marked competition in 1885 between the railway carried coal and the sea-borne, which must bring down the rate by the former. House coal has gone off rather more freely for the Metropolis, but prices remain unaltered, the best Silkstone being delivered at 2*l.* 1*s.* per ton, and from one of the Derbyshire collieries at 1*l.* 10*s.* Steam coal remains unchanged, a comparatively small quantity finding its way to London, where as kitchen coal some of it is delivered as low as 17*s.* per ton. The season for increased deliveries of gas coal has commenced, so that considerably more is now going southward in particular. Small coal for manufacturers' use is still in but moderate request, although it can be purchased at less than what it costs the colliery owners. In coke no change has taken place, the comparatively moderate tonnage turned out in the county being very far below what is required, even for iron smelting.

The production of pig in Derbyshire is not so large as it was in the earlier part of the year; but, to say the least, it is fully equal to the local consumption and the demand upon the part of other districts. Some of the large foundries, including those at Staveley, Clay Cross, and Stanton, have been working fairly; but they all complain of the competition which prevails, and which, of course, results in bringing down the prices of finished iron to a point that leaves only a small profit. Gas and water pipes have been turned out in tolerably large quantities, as have some other descriptions of heavy castings, for which the locality is noted. In the lighter description of common castings business has ruled quiet. At Dronfield, which has fallen off a great deal since Cammell's removed their works to Workington, the Messrs. Lucas have been able to keep their works steadily going. In addition to the small and highly-finished malleable castings, with which the name of Lucas has been identified for nearly a century, the production of steel spades and shovels has kept that branch of the works well going. The mills have also been working steadily, with every promise of an increased

demand for rolled iron, such as is turned out at the works at Butterley and Codnor Park.

Since last notice some departments of the Sheffield trade have become rather busier, and orders, although only to a comparatively small extent, have reached us from America, and there is now every appearance that from that quarter more business will be done during the next three months than in any similar period of the year. Still, there are a considerable number of men working short time, besides some altogether idle. Some of the manufacturers, however, looking to the good harvest which we have had, are now giving out work more liberally, as there is no doubt that an increased business will now be done in the home markets in most kinds of hardware. Agricultural, garden, and horticultural tools may now be said to be over for the season, so far as the home demand is concerned. But one or two houses, including Crowley and Co., are fairly off for business in chaff-cutting and similar machines, and others are doing fairly well in sheep-shears for exportation. A steady output of Bessemer steel has ruled off late, for cutlery and tool makers are using a good deal of it, instead of the far more expensive crucible steel, special qualities being made for the purpose. Of late the make of steel rails has rather increased, prices being better than they were, whilst makers of springs for railway purposes, axles, tyres, and connecting-rods, have been kept well employed.

In table and pocketknives the business done has been anything but good, and only the first-class houses have had their hands anything like fully employed. A change for the better, however, is now looked forward to, and of this even now there are favourable indications. In butchers', cane, and general machine knives a steady trade is being done, a good deal being for exportation. Coming to the heavier branches it may be said there is still plenty doing in steel-faced armour-plates, in which both Brown's and Cammell's have been very busy during the whole of the year, and no doubt will be for a considerable time to come. Ordinary ship and boilerplates have not altered much of late, the demand being but moderate, whilst hoops have gone off well, India taking a good deal of what is made.

The Coal Trade of South Yorkshire is beginning to look better, even as regards household qualities; so that some of the pits are now working full time. Steam coal has also gone off well, more especially to Hull for shipment to the north of Europe, the Steam Coalowners' Association actively working up the shipments by making known the qualities of the coal which will bear favourable comparison with the rest raised in the North of England or even that of South Wales, whilst it is shipped at a much less cost.

## TRADE OF THE TYNE AND WEAR.

Sept. 4.—There is not much change to notice in the state of the Coal and Coke Trades here; there is still a good demand for best class steam coal, and the highest class works are some of them fully employed; but second-class works are not in that position, many of them are, indeed, working short time, some only six or seven days per fortnight. In Durham the best class gas and coking coal works are fairly employed, while others are only moderately kept going. The continued and severe depression in the iron trade is now severely felt, and some of the works producing manufacturing coal are very moderately employed, some of them are only worked from six to seven days per fortnight. Freights in the shipping trade continue very low, and merchants are, therefore, anxious to place orders in consequence. Steam tonnage for over 30,000 tons cargo have been chartered during the past two days; the result is that loading terms are difficult to arrange. There is still an active demand for fire-bricks and most kinds of fire-clay goods, and also for Portland cement, &c. The local chemical market continues steady. Bleaching powder is a little more plentiful, but there is not much change in the value of any kind of chemicals. Bleaching powder is 8*l.* 2*s.* 6*d.*: soda crystals, 3*l.* 1*s.*, and other articles in proportion.

A considerable amount of good work has been done during the past few months in connection with steam ship companies. The working expenses have been reduced considerably; the cost of insurance and some other charges have also been reduced; but much remains to be done. It is quite clear that the great bulk of ships lost occurs when the vessels are approaching shores or running near coasts, and in these cases fog often occurs; and it is suggested with reason that masters of vessels ought, under these circumstances, to be very careful in ascertaining the depth of water and also, in many cases, reducing speed materially. There is little doubt that increased caution in these respects would greatly tend to reduce the number of vessels lost. It is also worthy of notice that good bunker coals can be purchased on these rivers at the moderate price of 6*s.* 6*d.* per ton; but the vessels belonging to these rivers have often to take coal at foreign stations, situated at no great distance from our shores, and for these from 18*s.* to 20*s.* per ton has to be paid, at least 5*s.* per ton in excess of what the price ought to be, looking at the rate of freights to these points. Surely the colliery owners and merchants could arrange to provide coaling stations at these points and a plentiful supply of coal. Such an arrangement would not only increase the profits of steamers, but materially benefit the coal trade of the district generally. The shipments of coal at Tyne Dock for the week have been above an average, though less than in the corresponding week last year. The quantity for the past week was 107,344 tons. The coal shipments in the other docks and principal shipping places on the Tyne have also been good. At Sanderland and Seaham Harbours the shipments of coal and coke are good, but all other trades are extremely dull, and a large number of men are unemployed. Some new orders for ships are expected there shortly.

The result of the year's work in mining, ironmaking, and all branches of trade, and commerce has so far certainly been disappointing. In the coal trade the production is still large, and the exports are large, but prices on the whole continue low, and small profits are complained of in all branches. The coalowners have got some relief by the action of the sliding-scale, but still it cannot be said that mining is profitable. It is, however, held by some that stocks are being gradually reduced in many trades, and this may lead to a revival in trade, which is anxiously looked for. The iron trade continues in a very dull, depressed state. It was hoped that shipments would materially improve, but they have not done so; it is, therefore, feared that there will be again an increase of stocks at the end of the month. Makers still adhere to the price agreed upon—37*s.* for No. 3. It is hoped that shipments will increase as the winter approaches. Foreign reports and American reports are not favourable. There is little prospect indeed of an improvement in the iron shipbuilding here, when cargo steamers mainly are built. Active arrangements continue to be made to manufacture steel-plates in the place of iron ones.

There is little change in prices. Ship-plates are 5*l.*; bars, 5*l.* 2*s.* 6*d.*; angles, 4*l.* 15*s.* The state of trade is indicated by Bolckow, Vaughan, and Co. not paying an interim dividend, as has been done for several years past, and also by the iron manufacturers giving notice of another reduction of workmen's wages to the extent of 5 per cent. Messrs. Connal's stock is 55,989 tons—a reduction of 371 tons upon the week. The exports of pig-iron for the week ending Friday last were only 15,114 tons, and from August to the same time 68,274 tons, as compared with 65,589 tons in July. The coal and coke trades are unchanged at Middlesbrough. The traffic receipts of the North-Eastern Railway Company have fallen very much off for some time, and in consequence the managers and agents of this great company are compelled to reduce the working expenses as much as possible. A considerable number of men have been paid off lately at the Gateshead shops, and in other departments of the works, and lately the manager at Gateshead posted a notice to the effect that from Sept. 1 all men and boys employed in the running shed, except fitters and boiler-smiths, would be paid at the rate of 10 hours per day. If this had been persisted in a strike would have been the result, as the men consider it would have been an infringement of the nine hours system, which was introduced in this district a few years ago, after a severe struggle, which continued for months, between the masters and operatives. Mr. McDonnell has, however, withdrawn the notice for a fortnight, and he states that he did not intend the notice to be an infringement of the nine hours



system. It is, however, difficult to see what it is if not aimed against that system. The notice given by the ironmaster for a further reduction of wages will come into force at the end of this month. The men accepted about two months since a reduction of 2½ per cent., and it was arranged that, if possible, a sliding-scale should be agreed upon. The standing committee of the board has so far failed to issue a scale at the meetings which have been held, and the employers have, therefore, given this notice. The ironworkers will strongly contest the claims, especially as it would put them below any rates of wages hitherto paid in the trade the 6s. 6d. per ton for puddling now current, being the lowest rate paid in 1879 during the depression then prevailing, or at any time previously. All this shows most clearly the deplorable state of the iron trade at the present moment.

#### REPORT FROM LANCASHIRE.

Sept. 4.—Indications are beginning to show themselves that the duller portion of the summer season has now been got through. There is no rush of orders, as was the case in September two years ago and, to a lesser extent, last year, but there are more enquiries coming forward, and in the better classes of round coal for house-fire purposes there is an increased business doing. Common round coals are also moving off freely for shipment, and pits generally are getting into more regular work; here and there they are being kept on full time, and there are very few of the collieries that are not working four days a week. With the exception that one or two of the leading Manchester firms have put up their wharf rates for best coal 10d. per ton, there has been no actual advance in prices this month, but there is a tendency to harden up to full prices where sellers have been taking under list rates to secure orders. Colliery proprietors are now adhering more closely to 9s. as the price for best Wigan Arley at the pit mouth, 7s. for second qualities and Pemberton Four-feet, and 5s. 9d. to 6s. per ton for common round coals.

There has in some cases been a slight advance in the prices quoted for shipment and delivered at the High Level, Liverpool, or the Garston Docks; common round coal now averages 7s. 3d. to 7s. 6d. per ton.

Engine classes of fuel continue in moderate demand, but plentiful in the market, and there is every probability of slack being a considerable drag during the winter. Prices are not more than maintained at late rates, and at the pit mouth average about 4s. 6d. to 5s. for burgy, 4s. to 4s. 3d. for best slack, and 3s. 3d. to 3s. 6d. for common qualities.

There is some probability of a dispute with the colliers in the Oldham and Ashton district; notices have been served upon the men to terminate present contracts with the view of a reduction in wages, the precise amount of which has not yet been decided upon, and the men express a determination to resist should any reduction of wages be attempted.

Business in the Iron Trade of this district continues extremely dull, but it cannot be said that it is in any worse condition. If anything, there is a tendency towards a rather stronger feeling; sellers who have been taking very low prices to secure orders are showing a disinclination to enter into further engagements on the same basis, and in some cases list rates have been nominally slightly advanced. There is, however, no actually realised improvement, and where business is done it is only at the minimum figures ruling in the market. Pig-iron still meets with a very slow sale, with local and district brands to be got at about 41s. to 42s., less 2½, delivered equal to Manchester, although makers in some cases hold out for 1s. to 2s. per ton above these figures.

Hematites continue in extremely poor demand, with sellers open to take very low prices where orders of any weight are to be got, good foundry brands delivered here being obtainable at about 53s. 6d. to 54s., less 2½ per cent. Rather more enquiry seems to be stirring in the manufactured iron trade, and shipments to the colonies appear to be on the increase. The principal finished ironworks in this district are fully employed; but there are still many of the makers who are short of work, and the competition is so keen that, although there is a fair weight of orders in the market, to secure business prices have to be cut down to a point that is practically unremunerative. Good qualities of Lancashire and North Staffordshire bars remain at 51. 12s. 6d., with common brands to be got at 51. 10s.; hoops, 61. 2s. 6d.; local made sheets, 71. 2s. 6d. to 71. 5s., and North Staffordshire qualities, 71. 5s. to 71. 10s. per ton.

The condition of the Engineering Trades remains much the same as last reported, orders in some departments slackening off, but generally activity fairly well maintained.

#### REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Sept. 4.—Among the less noticed minerals produced in North Wales last year there were 49 tons 3 cwt. of cobalt and nickel ore from the Foel Hiraddug Mine, near Rhyl; 25 tons of manganese ore from Nant Uchaf, near Abergelge; 80 tons of phosphate of lime from Cwmwynen, near Llanfyllin; 3113 tons of ochre from the copper mines of Anglesey, and 6950 tons of iron pyrites from Cae Coch, near Trefriw, Carnarvonshire. Very much more might be done in these low priced minerals only for the heavy cost of land carriage.

During a visit to Carnarvon slate quay last week I counted 29 vessels loading and waiting to be loaded. I also noticed that two cargoes of the blue slates from Glanrafon were being loaded. The same slates at Clogwynnwgwin prove very good in depth. This blue slate trade is opening up a great industry on the east side of Carnarvonshire. At the Plas-y-Nant Quarry operations are restricted to the driving of a tunnel to prove the rock in depth. At Port Dinorwic 21 vessels arrived, and 12 sailed last week. The returns on the North Wales narrow-gauge railway were the largest the week before last that have been received since the line was opened. At the half-yearly meeting of the Cambrian Railway Company held last Tuesday, Aug. 26, the shareholders fell in with the arrangement recently made under the direction of a court of law. Considerable efforts are being made to cultivate a tourist traffic. The prospect is rather remote, but it is hoped that the Cambrian railways will be permanently benefited by the completion of the various new railways in the district for which Acts have recently been obtained, and by means of which the system will be placed in communication both with the Great Northern and the Midland Railways.

The meetings of the Iron and Steel Institute, which are to commence at Chester on Sept. 23, promises to be of great interest. On Tuesday, Sept. 23, there will be a general meeting of the members at the Town Hall, followed by a luncheon at the Grosvenor Hotel, and in the evening the annual dinner will be held at the same place. On Wednesday morning a meeting will be held in the Town Hall, and at 1 an excursion will be made to the Crewe Locomotive Works. On Thursday there will be the usual meeting, and in the afternoon there will be two excursions, at 2-45 for the Chemical Works at Flint, and at 3 for the salt mines at Northwich. Friday is intended to be devoted to one or more extended excursions in North Wales, including the Festiniog Slate Quarries, Carnarvon, and Bangor, with the suspension and tubular bridges. The papers to be read are important in their bearings.

Among the works at present progressing in North Wales may be mentioned the new docks in the estuary of the River Conway, which are being constructed by the London and North-Western Railway Company for the accommodation of the Festiniog and Dolwyddelan Slate Quarries. Already a portion of the slate traffic of this district is diverted to the Llandudno Junction, and small cargoes are loaded on the upper side or the tubular bridge. Some of my readers may be old enough to recollect the erection of the Grosvenor Bridge at Chester 57 years ago. This bridge is remarkable for its magnificent arch of one span; but during the whole of this period very heavy tolls have been exacted by the trustees. A fund is being raised for the redemption of these tolls, which has now reached the sum of 29,811l., leaving only some 3000l. to be subscribed. The Chester Town Council are about to canvass the city and neighbourhood in order to raise this additional sum. One noticeable feature in Wales at the present time is the extension of science and art classes all over the country.

The colliers are returning to work after the festivities and holidays of last week, and there is every prospect of a good winter's trade. The unfortunate strike at Buckley still continues, and 600 men are out of work. There are no proposals for a settlement of the dispute from either side. The actual condition of the iron trade is slightly better, and the prospect for the future has also improved. There are still considerable stocks of pig-lead at the smelting-works. Still, work is good at these and the other works along the estuary of the Dee. The paving sett quarries along the coast of Carnarvonshire are distinguished by greater activity, and the lime and other stone quarries are generally busy. The same is also true of the brick, tile, sanitary ware, and terra-cotta works, which combined employ a great number of men.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Sept. 4.—The more active state of the Pig Market, as it affects part-mine sorts made outside Staffordshire, is fully maintained this week. Sellers report their ability to make heavy forward contracts if they were prepared to accept anything like all the offers which they are receiving. Consumers are evidently arriving at the conclusion that there will be no more favourable opportunity for them to buy than now appears. Prices are advancing. Some Northampton brands are quoted up 2s. per ton, making them 42s. delivered to stations. Good Derbyshire are 42s. 6d.; native part-mine are 45s. to 42s. 6d. Hematites are about 55s., and native all-mine 57s. 6d. to 56s. 3d. Consumers of Welsh and Cleveland pigs complained this week that the so-called reduction in carriage rates announced by the railway companies on Sept. 1 affords them little or no relief, since delivery to the works is not now included in the rates, but only delivery to railway stations. The finished iron trade is in rather better form than last week, the result of the uncertainty as to wages having been removed. Orders should now, therefore be placed with less hesitancy. The shipping orders for thin sheets are extensive. Best and medium quality bars are here and there in rather better sale, on the basis of 71. to 71. 10s. for the former and 61. 10s. for the latter. The New British Iron Company, Congreaves, have this week issued a new price-list showing some reductions in their charges upon "extras," but for ordinary sizes of bars prices are without change at 61. 10s. for best "Congreaves" bars, and 71. 10s. for Lion qualities. The coal trade exhibits this week no new feature of importance.

The recent notice of the employers in the finished iron trade of the North of England led to the notice of the ironmasters of Staffordshire, given before this last notice of their competitors, also for a reduction, being adjourned until Nov. 3. That much is the outcome of the arbitration proceedings, on Monday last, before Mr. Alderman Avery, in the Council House, Birmingham. To that date likewise stands over the *pro forma* claim for a rise with which the men met the notice given by their employers. Wages will consequently continue to be paid in Staffordshire, and in all the other districts which acknowledge the Staffordshire Board, on the basis of 7s. 3d. for puddling. Yet the Northern rate is 6s. 6d. per ton—a rate which may be still further reduced as a consequence of the notice now running its course in the North.

The leaders of the colliers are buoying themselves up with the hope that as the cold weather is approaching the masters will find it to their advantage to give the old rate of wages. At present, however, the employers show no signs of giving way, and it is possible that the strike may yet continue for some few weeks. Meanwhile the Strike Committee distribute the usual weekly allowance of 10s. per man to the Unionists. The only decisions of importance arrived at this week have been to continue the strike, and to ask those colliers at work at the old rate to demand a proportionate increase of wages when their employers advance the price of coal. The Hamstead Colliery Company report that an increased number of men have resumed work at the drop.

A conference of Cannock Chase coal masters' and miners' delegates was held in Birmingham this (Thursday) afternoon, when the latter asked for an advance of wages. The demand was strongly resisted, and the meeting was ultimately adjourned for three weeks.

Earl Granville's deep pit at Hanley has been put to stand this week, owing to an accident to the shaft of the engine. About 200 men are temporarily thrown out of employment.

#### TRADE IN SOUTH WALES.

Sept. 4.—The Steam Coal Trade presents no remarkable feature except its continued activity. Last week Cardiff sent away 125,288 tons, with 5521 tons of patent fuel; Newport, 34,124 tons foreign, and 23,320 coastwise; Swansea, 27,101 tons foreign, and about 14,000 coastwise, with 6368 tons patent fuel. Prices of colliery screened may be quoted at from 10s. to 11s., and house coal at from 8s. 6d. to 9s. 6d. Small coal is in slack demand, but the patent fuel trade is good.

At Harri's Deep Navigation the Abergorki vein was struck last Saturday, which will add several hundred acres more to the area in this colliery. This is one of the best house coals in the Rhondda Valley. The present output is 4000 tons per week.

The strike at the Gelli and Tynybedw collieries is likely to be soon settled, as both masters and men are approaching each other in a friendly spirit. The whole affair seems to have originated in a misunderstanding.

The Iron and Steel Trades of the district are still in an unsatisfactory condition. Men submit to a lowering of wages, but that does not seem to help matters much. Last week Cardiff sent away 1554 tons, and Newport only 150. Compare this with 1873-74, when both ports sent away about 20,000 tons each week!

The Tin-plate Trade remains healthy. There are enough orders on hand to keep the works going for some time to come. Stocks remain low, and while that is the case prospects will be good. IC cokes fetch from 15s. 6d. to 16s., while wasters are from 15s. to 15s. 6d.

Statistics just circulated and officially issued show that the South Wales and Monmouthshire production of Bessemer steel ingots for half-year ended June 30 last amounted to 221,316 tons. Of Bessemer steel rails South Wales produced 182,271 tons. Of Bessemer steel blooms, billets, plates, angles, &c., we find that South Wales produced 1926 tons of angles, whilst the billets for Wales amounted to 942 tons. The total production of pig-iron in South Wales and Monmouthshire during the first half of the year was 450,633 tons, a decrease of 15,609 tons as compared with the first half of 1883. Of forge iron, Glamorganshire produced 25,160 tons; foundry iron, 10,444 tons; Bessemer hematite, 85,040 tons; spiegeleisen and ferromanganese, 10,650 tons. The quantities respectively produced by Monmouthshire were 47,537, 6233, 199,115, and 11,452 tons.

From Richardson and Co.'s Monthly Circular for Sept. 1, 1884.—During the last month we have gone through another period of slackness and of lower prices. The following transactions in furnace material have taken place:—Chili regulus, 302 tons spot and 880 tons to arrive per Sindbad, at 10s. 6d.; Bolivian ore, 323 tons at 10s., and 611 tons regulus at 10s. 3d.; precipitate—600 tons Pomaron at 10s. 3d. and 10s. 4½d., and 86 tons Cueva de la Mora at 10s. 6d.; 340 tons Garonne ore, at 9s. 9d.; 190 tons Spanish ore, at 10s.; 71 tons New Quebrada kernels, at 9s. 9d.; 203 tons Carracedo ore, at 9s. 9d.; 100 tons Caveira ore, at 7s. 4½d.; and 30 tons Barancannes ore, at 9s. per unit. Quotations to-day are as follows:—Copper: Ores and regulus, 10s. to 10s. 3d. per unit; Chili bars (G. O. B.'s) 54½ to 54½ 5s.; tough ingot, 58½ to 59½. Silver: Bar, 4s. 2½d. per oz. standard. Tin: English block, 84½ 10s.; Straits, 81½ 12s. 6d.; Banca, 84½ to 86½. Lead: English pig (O. S. B.'s), 11½. Spelter: 15½ per ton. Bank rate: 2 per cent.

#### QUICKSILVER-WAVE AMALGAMATOR COMPANY (MOON'S PATENT).

—The managing director of the Indian Gold Mines Company of Glasgow—a practical gold quartz miner of Australian and Californian experience—was last month deputed by the directors of his company to see Moon's Amalgamator at work. His report was so favourable that the company at once arranged for the purchase and shipment of one of the machines, and it is now being shipped for the Malabar coast. The machine is to treat 10 tons of ore per day, and to be ready to work at once on arrival at the mine.

#### NEW PROCESS FOR THE MANUFACTURE OF PORTLAND CEMENT AND OTHER HYDRAULIC CEMENTS, AND THE UTILISATION OF GRANULATED ORES.

At a recent meeting of the Engineers' Club of Philadelphia, Mr. E. F. LOISEAU read an interesting paper on this subject, in which he said that limestone containing more than 10 per cent. of silica possesses when burnt and made into a mortar the peculiar property of hardening under water. Lime burnt from such limestone is termed hydraulic lime, and the mortar hydraulic mortar. When unburnt, the silica, generally silicate of alumina, the latter being insoluble in hydrochloric acid. During the burning the hydraulic lime undergoes a change, similar to that taking place when a silicate insoluble in acid is precipitated, during the application of heat, with an alkaline carbonate. After burning the lime is to a great extent soluble in hydrochloric acid, and has lost some of its carbonic acid. It follows from this that an artificial hydraulic mortar can be prepared from ordinary lime by the addition of silica. This preparation is termed a cement. A few natural cements are found, and may be considered chiefly of volcanic formation; but the high price of natural cements, consequent upon the smallness of the quantity found and the difficulty of working them, has given much encouragement to the manufacture of artificial cements.

To England is due the credit of having first introduced the manufacture of Portland cement on a large scale; and although other countries, especially France and Germany, have introduced its manufacture in certain limited localities, the peculiarly advantageous position of England, in having inexhaustible stores of the raw materials in their cheapest and simplest conditions, coupled with the low price of fuel, enables that country to supply the article to every quarter of the globe. Portland cement is a compound of argillaceous or argillo-magnesian substances, and may be made from natural rocks or earths wherein are found by analysis the necessary proportion of silica, alumina, and lime or magnesia; or from a mixture of lime with clays of different kinds. It is usually made in two ways, known as the wet or English process and the dry or German process, thus described by Prof. De Smelt:—

In the wet process the proper proportion of clay and chalk having been collected are thrown into a pug-mill, and water is added. The mixture is constantly stirred, and is allowed to flow out in a paste of about the consistency of cream on to drying floors heated by steam, for the purpose of expelling the excess of water by artificial heat, or into backs or vats in the open air about 2 ft. deep, where by decantation and evaporation all the water is drawn out. The paste thus formed is cut when dry into bricks or squares about 1 ft. to 2 ft. square, and carried to the kilns. When placed in the kilns many of the pieces lose their corners, and much of the dry material is scattered off by reason of the intense heat, and the powder thus formed is wasted, as it mixes with the dust of the ashes. The square form or squared sides of the bricks prevent draft, owing to their many points of contact. When drawn from the kilns the material is in the form of clinkers, in masses as large as a man's head, and in most cases covered with an impenetrable vitrification or glaze, which is injurious to the manufacture of cement, and makes the grinding very difficult. The clinker drawn from the kilns is carefully examined, all vitrified pieces thrown out, the under-burnt portion put in again, and the good clinker broken up, and then ground and packed in barrels ready for market.

In the dry process the chalk and clay having been dried and powdered are mixed together in a dry mixer in a dry state, and are then run into a pug-mill, where just enough water is added to make a stiff paste. The material as it exudes from the pug-mill is cut into bricks, loaded on cars, and carried to a drying-room, when in about a week or two weeks' time it is ready to be carried to the kiln. It is then burned as in the wet process, ground, and barreled. The same disadvantages of burning apply to this dry process as have been described as applying to the wet process.

The disadvantages of the wet system are—1, The immense storage room required for the wet paste; 2, the repeated handling required; 3, the irregularity of the manufactured article, the paste run out on the backs being composed of materials of different specific gravities, the heavier naturally settling to the bottom; 4, the large capital required to carry the stock of paste in the backs, the material requiring from two to four months to dry. The disadvantages of the dry system are—1, It requires one more handling, one more grinding than the wet; 2, the large expense for drying-floors; 3, the large expense for fuel required in the drying operation. And the disadvantages incident to both systems—1, The handling of the material from the mixers to drying-floors or backs, and then back to kilns; 2, the waste of time and money before the mixed material can be used; 3, the loss by wastage in the kilns; 4, the difficulty of grinding the glazed clinker; 5, the extra amount of coal required to send heat through the cold or only partly warmed masses of dried paste. It will be noticed that most if not all of these disadvantages are due directly or indirectly to the preliminary drying operation, which is performed before the calcining operation can take place.

Ordinary paste formed into bricks or other forms if subjected to the moist state to a great heat will fly apart, and will all scale off into powder, leaving nothing behind, and consequently proper calcination is impossible. This effect is due to the sudden evaporation of the water contained in the bricks or pieces. The water in its course toward evaporation encountering an obstacle (the coating formed on the outside of the brick) breaks it in order to escape. This scaling off goes on continually until the whole piece is reduced to powder. It is for that reason that the paste is now thoroughly dried before calcining it—a process of great length and most expensive. The problem to determine is how to produce bricks or pieces in a moist state of a sufficient porosity to allow the water of evaporation to escape during the calcining operation without breaking the bricks into pieces or dust, and this result was obtained by Prof. J. De Smelt, of Washington, D.C., by mixing hydrocarbons with the argillaceous or argillo-magnesian material prior to the calcining operation, and moulding the paste into bricks or forms. The lamps in their moist state may be taken at once from the mill or place where they are formed and put into the kiln, no delay being necessary—in fact, the sooner they are put into the kiln the better. During the calcining operation the combustible contained in the brick burns out gradually, and the brick is thus rendered porous little by little, according to the penetration of the combustion. The steam or vapour has thus afforded to it a free passage from the brick, and the latter preserves its form and shape unimpaired throughout the process of calcination. There is a noticeable absence of the surface glaze or vitrification which usually appears on the calcined brick under ordinary methods, and besides this the calcination is more uniform and regular by reason of the introduction throughout the brick of a heat-giving combustible. The bricks or forms after calcination are ground, and the product is packed in barrels in the usual way.

As compared with the wet system Prof. De Smelt's invention does away with the backs or vats and the necessity for acres of storage room. It lessens the amount of handling required, because it permits the paste to be run directly from the mixers to the kilns. It prevents the irregularity in the paste which results in the wet system from the settling of the heavier portions, and it lessens the outlay of capital required to carry the paste for months before it is ready for use. As compared with the dry process it reduces the ordinary handling about one-third. It does away with drying-floors, and it also does away with the expense for fuel now required to dry the paste. As compared with both systems it reduces the time required for manufacture from months in the wet system, and weeks in the dry system to two or three days. It reduces cost of grinding, by wastage and powdering in the kilns. It reduces cost of the usual owing to the porosity of the clinker and the absence of the usual surface glaze or vitrification. It reduces the amount of fuel required to calcine the bricks, and it insures a regular and uniform product. This process is applicable generally to all hydraulic cements in which the material is reduced to the condition of a paste before calcination.

In testing, on a large scale, Prof. De Smelt's process as well as the process of Messrs. Willcox and Lesley, of Philadelphia, they mixed the ground rock with crude coal tar, adding a small quantity of water to form the paste, and this moulded well enough, but nothing



half eggs could be obtained. The coal tar by itself had not sufficient binding power to form the paste, and this moulded well, but nothing but half eggs could be obtained. The coal-tar itself had not sufficient binding power to form a solid egg, and the moulding roller would carry off a half egg. Mr. Loiseau had used a new feeding piece for the press, and the materials were mixed very regularly between the two moulding rollers, therefore the trouble did not originate with the condition of the machine, but could only be attributed to the condition of the materials when mixed. The mixture was plastic, and in order to render it coarser, he added to it a certain percentage of coke dust, which he thought would bind more firmly together the almost impenetrable cement rock, and destroy its plasticity when mixed with coal-tar and water. The result was very gratifying, and from time the lumps left the mould in their entirety. The calcination of the lumps, conveyed directly from the press to the kiln without the lumps, was very successful, and demonstrated conclusively that Prof. De Smedt's theory was correct. The egg-shaped form of the lumps facilitated the calcination and distributed the heat more evenly. It also required less time and a smaller quantity of fuel than by the old process.

No improvements have been made in the manufacture of hydraulic cements for a number of years, but the improved methods of Prof. De Smedt and Messrs. Lesley and Willcox have given such important results that they will no doubt create a radical change in that branch of industry. These experiments have, moreover, demonstrated that, with Mr. Loiseau's machinery, any kind of pulverised, granulated, or gritty material can be solidified in egg-shaped form, which is the most convenient for handling, and which leaves always between the lumps sufficient space for the free circulation of air or heat, and consequently for a free combustion. Through the courtesy of Messrs. Lesley and Trinkle, he was also enabled to experiment with granulated magnetite ore from the Phoenix Iron Company's Hazy vein, at Hoytown, Beaks County. This fine ore cannot be roasted and but a small portion of it is used raw in the furnace. It contains from 14 to 16 per cent. of sulphur, as I am informed by Mr. John Hy. Gorden, general mining engineer of the Phoenix Company. The result of solidified shapes of the fine ore would enable it to be roasted, so that pig-iron made from it would contain a smaller percentage of sulphur than at present. It would also utilise all the fine ore mined. On examination he found that the ore contained sufficient argillaceous matter, and he merely mixed some water with the ore as it had been sent to me. The success was complete. He submitted the lumps to several degrees of heat, and they stood the fire without breaking. The roasting was perfect.

In the discussion which followed, Mr. ROBERT W. LESLEY said that the address had left little for him to add, but he would say a few words in reference to the manufacture of Portland cement in a practical way, under Prof. De Smedt's process and the additional one, jointly invented by himself and Mr. James M. Willcox, well known as the inventor of the fibre bank note paper used by the Government. As an element in successful manufacturing under Prof. De Smedt's process it can readily be perceived that means for the prompt hardening and handling of the cement-making material would be of value, and the invention last mentioned has reference to this. By taking the material in its powdered condition, incorporating it, in a mixer of any suitable form, with coal tar or any other liquid combustible, and adding to it a minimum of water, sufficient merely to moisten the powder, and then moulding this moistened powder into forms suitable for burning by subjecting it to pressure between heavy rolls—this desideratum is attained. In this way a number of practical questions of manufacture are settled. In the first place, the mixture, possessing less moisture requires less time for burning, and, as the proportion of water is materially reduced as compared with the amount used in the ordinary processes, much less of this useless material is handled in the manufacture. Furthermore, this mixing being done with the cement material in practically a pulverulent condition, a much more thorough incorporation of the combustible and intermixture of the particles of powder are attained than by the common practice, and in addition to this, also, there is the further advantage to be derived from the fact that the forms, being preferably made by compression between heavy rolls, have a uniform porosity and density, instead of being of various degrees of porosity and density, as they are when made in the usual way by spreading out the cement paste on drying-floors, tamping it by hand and then cutting it into bricks.

In practice so far, he continued, the best machine for accomplishing the result is the fuel compressing press invented by Mr. Loiseau, and so successfully used by him in the manufacture of artificial fuel at Port Richmond. This machine, as is well known to those interested in the subject of artificial fuels, consists of a pair of heavy iron rolls, having elliptical or egg-shaped cavities or perforations on their faces, whereby the material to be moulded is compressed between the matched cells into egg-shaped lumps. The rolls, which are about 3 ft. long and 30 in. in diameter, run at a comparatively slow speed, yet, by reason of the great number of cells upon their faces, have great moulding capacity and produce a large output per hour of material ready moulded for the kiln. The machine is surmounted by a Dietz mixer, from which the ground cement material is delivered to the rolls. After the moulding operation this material, in the form of hard, stone-like lumps in the form of eggs about the size of hen's eggs, is conveyed by endless belts directly into the kiln. As already stated, the immense capacity of the machine enables it to mould large quantities of the material per day, and thus at a small cost for labour and power it can prepare and deliver to the kiln by a single operation and in a few hours material which, under the "wet" system, it would have taken weeks, and under the "dry" system, days to prepare, and which would under either system have involved repeated and numerous handlings by manual labour between the grinding mills and the kilns. Moreover, it may further be said that there were no gain in time or labour, the simple fact that by this process small, egg-shaped lumps nearly dry, and having no flat surfaces, are put into the kiln, instead of the thick, damp, square-sided pieces commonly used, would be an important feature in its favour, as it needs no discussion to show that it is a great improvement in a manufacture where the object of placing the material in the kiln is to burn it thoroughly, promptly, uniformly, and cheaply, to substitute round-sided lumps all of equal porosity and density, admitting of a free draft, and having no flat sides to melt and run together, for the usual square-sided bricks requiring to be placed into the kiln in layers by hand, and which clog the draft and run together in large masses.

#### THE MINERAL VEINS OF THE LAKE DISTRICT.—No. II.

Hitherto reference has only been made to the formation of quartz veins, but the carbonate of lime, which, however, only occurs in very small quantities, comparatively, could be derived from the same source, as will be apparent from an inspection of the analyses—but the time of the original rock being soluble in the acid solution it would require the presence of some salt, such as carbonate of soda, to precipitate it. At such times as those in which the veins were formed this salt would probably be plentiful. The formation of veins being thus accomplished, the manner in which the metallic minerals were subsequently deposited in them remains for consideration hereafter. In the meantime, it may be advisable to see how far the results to be expected from such a mode of formation as that suggested are in agreement with the actual appearances presented by veins.

It is submitted that the proposed explanation renders completely intelligible the subjoined facts:—1. The intimate relation between the mineral character of the country rock and that of the principal parts of the contents of veins. It has been suggested by Mr. J. G. Goodchild, in a paper on the minerals occurring in Cumberland and Westmoreland that the siliceous character of the veins of the Lake district depends upon the time at which they originated, but on the view set forth above it would appear that the composition of the enclosing rock is the chief determining factor. 2. The inter-lacing of the country rock with quartz would result from the action of the acid solution along lines of intersecting joints. The curious form of the quartz seen elsewhere may also be easily accounted for

in a somewhat similar way. 3. The unbroken or undisturbed condition of the veinwalls is a necessary consequence of the fact that they have never been left unsupported, whilst their indistinctness in some cases is only what might have been expected from the nature of the action producing the veinstone. 4. The occurrence of horses entirely surrounded by veinstone, is quite intelligible if it be supposed that there originally existed a strong joint on each side of them along which the acid solution operated. 5. Loughs, which are usually looked upon as part of the primary fissures that have not been filled, are on this view, a consequence of the removal of material which originally existed in association with some of the quartz at present in the vein. Probably they have been produced since the metallic minerals were deposited. 6. The evidence of pre-existing faults on the lines of veins would by the suggested action be destroyed, which would account for the absence of such evidence now. The clay partings or "dook" sometimes met with, as previously mentioned, may be the result of a small movement which has taken place since the formation of the veinstone, or it may be that the "dook," which occupies so much of the unproductive parts of veins, existed before the veinstone, and, owing to its impervious nature, prevented the circulation of acid solutions in those parts of veins where it occurs, which would account for the absence of veinstone there. 7. Variations in the breadth of veins would follow as a natural consequence of that variable solubility of different parts of a rock, which is so well known.

In the same way considerable light is thrown upon many other facts which need not now be specially mentioned. It may, however, be interesting to enquire what were the particular physical conditions under which such chemical changes as are suggested were possible. From a microscopic examination of veinstone—adopting the method of investigation first employed by Sorby—the conclusion is reached that the veinstones of the Lake district were formed under a pressure of at least 30,000 ft. of rock. The unreliability and the difficulty of using Sorby's method were perhaps never more clearly established than in this particular instance. From the relation borne by mineral veins to the stratification and cleavage of the rocks in which they occur—many of them, and the oldest, being coincident with the cleavage—it is quite certain that those veins were not formed before the Devonian era. At that time the silurians had been very severely dislocated, tilted, and denuded, and had approximately, assumed their present stratigraphical relations, as is shown by the fact that every member of them is, at some point or other, overlain by carboniferous rocks. It is, therefore, impossible that the veins were ever covered by the thickness of rock mentioned above. It may be said, of course, that the veins were not formed until after the permian era, when both the carboniferous and permian rocks were spread out over the Lake district. But it is most improbable that these rocks ever did cover the Lake district. One very curious and unrecorded fact may be mentioned as bearing on this point. At the Crossfield Iron Mines, near Cleator, in the bed of shale separating the fourth and fifth limestones of the carboniferous limestone, a perfectly rounded boulder of Ennerdale syenitic-granite was met with. It was about the size of a duck's egg, but less elongated, and exactly the same in every respect as boulders of the same kind of rock that can now be found on the sea-beach at St. Bees. This fact shows that at the time the lower beds of the carboniferous limestone were forming the Ennerdale syenitic-granite was above the sea. Whether it so remained throughout the carboniferous period has not yet been ascertained, but it is very probable that it did, for in the breccia forming the base of the permians in this district fragments of lavas and ashes and of Ennerdale syenitic-granite are very abundant. (Since this was written, Archibald Geikie, F.R.S., Director-General of the Geological Survey, in a lecture delivered at the Royal Institution, Feb. 5, 1884, "On the Origin of the Scenery of the British Islands," has said,—"The carboniferous limestone on the flanks of the Lake district is so thick that it must have spread nearly or entirely over the site of the mountains. But it was overlaid by the millstone grit and coal measures, so that the whole area was probably buried under several thousand feet of carboniferous strata. No doubt a considerable amount of denudation took place between the close of the carboniferous era and the deposition of the breccia, but that is really immaterial to the argument, for if any part of the carboniferous rocks ever did overlay the Ennerdale syenitic-granite it had clearly been removed before the permian breccia was formed. The most that can be said, therefore, is that a few hundred feet of upper permian rock (St. Bees sandstone) may have covered the Lake district, but that is most improbable, although there are not any facts known which will directly disprove it.

It is more than likely that the mineral veins were formed during one or other, or perhaps in part during each, of the periods of disturbance which have left so many marks upon the district. One of these periods, as previously mentioned, intervened between silurian and carboniferous times; another ushered in the permian era, whilst one series of movements, if not more, of a somewhat violent character took place in mesozoic or neo-zoic times. Now, the amount of denudation to which the silurians have been subjected since Devonian times—the furthest back that the formation of these veins can be placed—probably does not, in some parts of the district at any rate, exceed 3000 or 4000 ft., so that the thickness of rock overlaying some of the veins, at the time they were formed, cannot have been greater than that.

The next matter to be considered is the introduction of the metallic minerals into the veins. Whatever may be the age of the veinstones the metallic minerals must be younger, but how much younger it is impossible to say. It has been seen that the cavities in the cellular veinstone would, in the first instance, amount to about 32 per cent. of the total volume of the quartz. It has also been seen that the metallic minerals do not occupy, in any case, more than 20 per cent. of the bulk of the veinstone, so that there would be abundance of room for those minerals in the quartz cavities, and there would be sufficient space beside for the accommodation of the non-metallic minerals, such as barite, that were formed after most of the metallic minerals, as well as for the large quantity of quartz, in crystals, which has found its way into the vein at various times since the first introduction of the metallic minerals. In this way it is submitted all the complicated appearances met with in veinstone veins may be explained. Of course, it is not to be supposed that the cavities left in the veinstone after its separation from the bases associated with it in the original rock were all of one size and form. Some of them might be long, deep and narrow, so that, when filled, they would form "ribs" of ore; others might have the form and dimensions of "bunches" of ore, but the bulk would most likely be such as, when filled, would give rise to the "spots" and "blotches" so common in veins.

The next question that arises is, where was the source of the metallic minerals? All those which occur in the largest quantities in veins are sulphides. They are—Chalcocite =  $\text{Cu}_2\text{S} + \text{Fe}_2\text{S}_3$ ; galena =  $\text{PbS}$ ; blende =  $\text{ZnS}$ ; and, pyrites =  $\text{FeS}_2$ . The other minerals are much less abundant, and some of them are very rare. A few are sulphates, but they are mostly silicates, oxides, or carbonates, and are probably only alteration-products from the above-mentioned sulphides, so that it is only necessary to ascertain the source of the latter. Now, the source of sulphur combinations, such as the above, so far as all experience goes, is volcanic, and seeing that this district has, on several occasions, been the scene of extraordinary volcanic activity, it is nothing more than might have been expected that metallic sulphides, and even non-metallic sulphates, such as barite, should have been produced during those disturbed times, and that they should have been deposited in the rocks if there had been a suitable receptacle for them; and, surely, there could not have been anything better adapted for such a purpose than the cellular quartz of the veinstone as it was originally formed.

VICTORIA GOLD COMPANY.—Last week, the Quicksilver-Wave Amalgamator Company (Moon's patent) treated some hundred-weights of ore from the Victoria Gold Company's mines in Venezuela. The assays made before and after the treatment showed that the Amalgamator—already described in these columns—had saved upwards of 90 per cent. of the gold, the tailings assaying only 6 per cent. of the value of the ore, a result far in excess of anything hitherto obtained, the average results of the treatment of gold ores

in South, as well as in North, America being less than 60 per cent. of the gold value. The above ore was unusually rich, assaying over 20 ozs. per ton. The assays were made by Mr. Claudet.

AMERICAN MINE INSPECTION.—The gentleman referred to in the subjoined paragraph from the New York Mining Record has been so long known as a correspondent of the *Mining Journal* that it will be unnecessary to do more than reprint it:—"Mr. J. S. Phillips, the well-known mining engineer, formerly on the Pacific Coast for many years, but now at State-street, New York, has been selected by English capitalists for the examination of some of our southern mines. Cable address 'Josaphilo,' New York. He will commence work in Georgia early in October, and will return through South Carolina, North Carolina, and Virginia. We are pleased to state that they could not have employed anyone for the service who is better qualified, by long and varied experience on both sides of the Atlantic."

INSPECTION OF MINES.—The gentleman advertising under the initials "T. L." in another column of to-day's *Journal* has not only graduated at the Royal School of Mines, but has also studied at Freiberg, and performed a considerable amount of inspection work both in Europe and America. The reports which he has already made are said to have given full satisfaction to those for whom they have been prepared, and to have supplied them with such accurate and intelligible details that their practical action upon them has been greatly facilitated.

OUR GOLD SUPPLY.—ITS EFFECTS ON FINANCE, TRADE, COMMERCE, AND INDUSTRIES.—A work under the above title, by Mr. THOMAS CORNISH, M.E., a well-known correspondent to this *Journal*, is in print, and will shortly be issued by the publishers, Messrs. Eden, Fisher and Co., Lombard-street. The importance of the question of "Our Gold Supply" is one that affects the interests of so many that any practical information on the subject will be welcomed. Mr. Cornish's long and varied experience as a gold mining engineer will no doubt enable him to treat the subject in a practical manner and impart such information as will be read with interest by many who are interested in "Our Gold Supply."

NORTH PENSTRUTHAL.—At a special meeting on Thursday (Mr. James Laby in the chair) the resolutions suspending operations at the mine, and authorising a sale of the sets, machinery, and materials (previously agreed to at the meeting on Aug. 6) were duly confirmed.

NORTH BUSY.—The copper lode produces  $\frac{1}{2}$  ton of rich copper ore per fathom. The ground being easy, it can be cheaply worked. The new lode just met with in the cross-out is a strong lode of copper and munda, is being opened on east, and will intersect some branches of rich ore, when a further improvement is more than probable. The future prospects appear very hopeful.

COPPER AND TIN.—Messrs. FRY, JAMES, AND CO. (Sept 4) write:—Copper has continued uninterruptedly dull, but with a slight rally from the worst, in Chilian, during the last few days. The figures still show large deliveries and further reductions in the visible supplies; but consumers and dealers remain shy of buying in advance of requirements. Tin has fluctuated, somewhat as usual, but prices for foreign—cash—are precisely those of a fortnight ago; whilst tin for forward delivery is commanding 5s. less per ton.

FIG-IRON.—Messrs. WILLIAM CONNALL AND CO. (Aug. 30) write:—There has been very little variation in the market, prices having ranged from 41s. 3d. to 41s. 3d., closing sellers at 41s. 3 $\frac{1}{2}$ d. cash. Some of the special brands have been scarce, and are quoted higher. The stock in store shows a decrease of 1854 tons, and now amounts to 585,832 tons, with warrants in circulation for 549,115 tons. The Middlesbrough market is easier; No. 3, l.o.b. Tees, being quoted at 36s. 3d. per ton. The stock in Connall and Co.'s yards there, is 55,384 tons, being a decrease of 717 tons, and there are warrants in circulation for 54,725 tons.

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Rue des Croisades 32, à Bruxelles.

**DEPRESSION versus ECONOMY.**  
**LET ALL STEAM USERS COVER THEIR BOILERS AND STEAM PIPES with**

**TANNIC CEMENT.**  
And save 15 per cent. to 75 per cent. (according to situation of boiler and length of pipes) of their expenditure on Fuel.  
For prices and full particulars of this New Patent Non-conducting Composition, write to the Manufacturers.

**DAVID BURNS AND CO., Engineers,**  
10, BANK STREET, CARLISLE.  
AGENTS WANTED.

**TO LANDED PROPRIETORS, ESTATE AGENTS, SOLICITORS, AND OTHERS.**

**SURVEYS and PLANS of ESTATES, large or small, made at a fixed charge of One Shilling per acre anywhere in the kingdom.**  
Address, T. G. ALDERSON, Land Surveyor, 10, Queen's Grove, Nottingham.

**FOR SALE, at BRENDON HILLS MINES:—**  
ONE 28 inch cylinder PUMPING and WINDING ENGINE, stroke 9 feet, with fly wheel, winding gear attached, with one 12 ton boiler.  
Also ONE 25 inch cylinder PUMPING and WINDING ENGINE, stroke 9 feet by 7, with fly wheel, winding gear attached, with one 10 ton boiler fitted with Galloway tubes.  
Any further information may be obtained from Capt. HENRY SKELWILL, Brendon Hills Mines, Washford, Taunton.—Dated March 12, 1884.

**MANGANESE TO BE SOLD, about 100 tons, within a few miles of a shipping port.**  
Address, "McC," 4, Finsbury-circus, London, E.C.

**FOR SALE, NEW AND VALUABLE MACHINERY, comprising**  
**WATER-WHEEL 30 ft. diameter, 3 ft. breast, 6 in. square** hammered iron shaft, cast-iron sockets and rings, carriages and brasses complete. Woodwork is of red and pitch pine, all of the best material and workmanship.  
**ONE CORNISH CRUSHER, Rollers 24 in. by 14 in., &c., complete.**  
**ONE THREE COMPARTMENT JIGGER, with pulleys, shafting, belting, &c., complete, all in working order.**  
Also a quantity of Smiths' and Miners' Tools, &c.  
Address, "McC," 4, Finsbury-circus, London, E.C.

**WANTED, A FEW CAPITALISTS to join in SECURING some very valuable GOLD MINING and LAND PROPERTIES, from which large profits can be made.**  
For particulars apply to THOMAS CORNISH, M.E., care of MINING JOURNAL Office, 26, Fleet-street, E.C.

**AGENTS WANTED TO PUSH FIRST-CLASS MACHINERY OILS** commanding a large and successful sale. Liberal commission.  
Address, "Box 201," Post Office, Liverpool.

**PRACTICAL MINING ENGINEER, who has had several years experience in various parts of Europe, America, and Africa, is OPEN to a RE-ENGAGEMENT.** Thoroughly experienced in Rock Drills, Automatic Dressing Machinery, Pumping, Winding, Assaying, and Surveying. Speaks French and German. Unexceptional references. Age 41.  
Address, "M. E.," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

**CORNWALL MIXED ORE AND CHEMICAL COMPANY.**  
Applications for the FEW REMAINING SHARES in this Cost-book Company should be made at once to the Purser and Secretary.  
MR. WM. ARGALL, Breage, Helston, Cornwall.  
Full particulars will be forwarded on application to him.

**TO INVESTORS.—£2000 will PURCHASE ONE-HALF INTEREST in two very valuable Tin, Copper, and Arsenical Mundic Mines, in one of the best mining districts in Cornwall, and which have been thoroughly proved. All plant and machinery is in place. 400 tons of mundic alone can be raised monthly, giving a profit of over £300. Strict investigation courted.**  
Address, "Z.," care of Mr. J. A. White, Solicitor, 38, Holborn Viaduct.

**WANTED following MINE SHARES from date to the end of the month:—South Penwith, Corporation of South Australia, Javalla, West Africans (Camerons).**  
**FOR SALE, 10 Chontales, at 6s.; 10 West Phoenix, at 10s.**  
Please state number and lowest price.  
Address, "Z.," Creedy House, Redland, Bristol.

**METALLURGICAL DEPARTMENT, KING'S COLLEGE, LONDON.**  
Under the direction of Prof. A. K. HUNTINGTON.  
In the Laboratory, Metals and Alloys are examined mechanically with the aid of powerful Testing Machinery, as well as chemically. Extraction and manufacturing processes investigated, and assays and analyses made.  
A FEW FREE ENTRIES to the division of studies (day or evening) are obtainable through the City and Guilds Institute.

**MINE "EL CALLAO," GUAYANA, VENEZUELA. 32,200 SHARES.**  
Gold in bars produced in the month of July, 1884, and remitted to Messrs. Baring Brothers and Co., London—15,735-63 ozs.  
DIVIDEND distributed for each Share, 28 francs.  
(Signed) A. LICIONI, President.  
(Signed) VICTOR T. GILLET, Treasurer.

## COAL MINES REGULATION ACT, 1872.

EXAMINATION FOR MANAGERS' CERTIFICATES OF COMPETENCY.  
DISTRICT UNDER THE CHARGE OF THOMAS EVANS, Esq., H.M. INSPECTOR OF MINES.

**PERSONS desirous of being EXAMINED in this District for MANAGERS' CERTIFICATES OF COMPETENCY, under the above-named Act, should at once COMMUNICATE with the Secretary to the above-mentioned District at the following address:—**

By order of the Board, WILLIAM SAUNDERS, Secretary.  
The Arcade, Derby.

N.B.—Persons who do not reside within the District are equally eligible for examination with those who do.

**In the Court of the Vice-Warden of the Stannaries, Stannaries of Devon.**

**IN the MATTER of the COMPANIES ACTS, 1862 to 1880, and of the TAMAR SILVER-LEAD AND FLUOR-SPAR MINING COMPANY (LIMITED).**  
Notice is hereby given, that by an Order of the said Court, made in the Matter, dated the 28th day of May last, FREDERICK EVERETT, of the Warwick-road, Stoke Newington, in the County of Middlesex, Accountant, was appointed OFFICIAL LIQUIDATOR of the above-named Company.  
FREDERICK MARSHALL, Registrar.  
Dated, Truro, August 29, 1884.

**In the Court of the Vice-Warden of the Stannaries, Stannaries of Devon.**

**IN the MATTER of the COMPANIES ACTS, 1862 to 1880, and of the TAMAR SILVER-LEAD AND FLUOR-SPAR MINING COMPANY (LIMITED).**  
Notice is hereby given, that ALL CREDITORS of the ABOVE-NAMED COMPANY are required, on or before the Twentieth day of September next, to SEND IN their NAMES and ADDRESSES, and the AMOUNTS and PARTICULARS of their SEVERAL CLAIMS on the said Company, to FREDERICK EVERETT, of 16, Warwick-road, Stoke Newington, in the County of Middlesex, the Official Liquidator, of the said Company.  
FREDERICK MARSHALL, Registrar.  
Dated Registrar's Office, Truro, August 29th, 1884.

**INVESTMENT IN FREEHOLD GRAZING LANDS, GROUND RENTS, AND ROYALTIES.**

**IMPORTANT TO TRUSTEES AND CAPITALISTS DESIROUS OF OBTAINING A PERFECTLY SECURE EMPLOYMENT FOR THEIR FUNDS.**  
**LANCASHIRE.**—A very valuable Freehold Estate, situated at Altham, immediately adjacent to the important town of Accrington, where there is a junction connecting all the main northern lines of railway. The property, which is of itself an entire parish, consists of an ancient manor, containing about 150 acres, divided into numerous capital grazing farms, the lands consisting entirely of pasture with a small portion of woodland, together with two hotels, small holdings, cottages, and ground rents, the whole producing an annual rental of upwards of £3000. Beneath the surface are very valuable coal mines in full work and other minerals, the royalties from which form a large additional income. The advantage of the living of Altham will form part of the sale. A portion of the property affords first-class building frontages, and is ripe for immediate development. It is intersected by the main road from Blackburn to Burnley, by the River Calder, and by the Leeds and Liverpool Canal. It is worthy of notice as evidencing the perfect security of the investment that throughout the past years of agricultural depression no reduction whatever has been made to the tenants, and the rents have been paid with perfect regularity, so that not only may the present rentals be regarded as a strictly sound security, but the capacity of the estate for further development will undoubtedly prove a source of handsome profit for present money invested.

**MESSERS. WALTON AND LEE will OFFER the ABOVE for SALE by AUCTION (first as a whole, and if not sold in that manner then in numerous lots) at the Mitre Hotel, Cathedral Yard, Manchester, on TUESDAY, Oct. 21, 1884, at Four o'clock in the afternoon (unless an acceptance offer by private treaty be previously made).**  
Particulars, plans, and conditions of sale are in course of preparation, and may shortly be obtained of JOHN PAWCELT, Esq., solicitor, Otley, Yorks.; R. T. W. HALLAM, Esq., solicitor, Colne, Lancashire; Messrs. MACDONALD and TEATHER, solicitors, 5, Newman's Court, Cornhill, London, E.C.; Messrs. JACOB and J. HIGSON, mining engineers, 13, Abchurch Lane, Mooney Street, Manchester; or of the Auctioneers, at their offices, 20, Mount Street, Grosvenor Square, London, W.

## IMPORTANT TO MINE OWNERS.

**FOR SALE, A PLANT of ROCK-DRILLING MACHINERY, quite new, comprising—**  
**ONE AIR-COMPRESSING ENGINE, with 12 inch cylinders, 3 and 3½ in. rock drills, stretcher bars, &c., &c.** Our Machines have been driving levels in hard rock 3 to 4 fathoms per week forward. Contracts undertaken.  
Address,—WARSON AND HILL, NOTTINGHAM.

**PIT SINKING, WINDING COAL, PUMPING, &c.**  
**PORTABLE STEAM ENGINE FOR SALE, with two 24 inch cylinders, and link motion reversing gear also gear to wind and pump.**  
**A 2 H.P. VERTICAL STEAM ENGINE, with link motion reversing gear (winding drum if required).**  
**A 6 ft. pan MORTAR MILL, VERTICAL ENGINE, and BOILER combined, on carriage and travelling wheels.**  
Apply to—  
**BARROWS AND STEWART, ENGINEERS, BANBURY.**

**FOR SALE:—**  
**TWO GOOD WINDING ENGINES, each with cylinder 15½ in. diameter, 2 ft. 7 in. stroke, with drums, brake, and reversing gear.**  
**ONE ditto, with cylinder 20½ in. diameter, 4 ft. stroke, with fly wheel and reversing gear.**  
**ONE ditto, with cylinder 15 in. diameter, 30 in. stroke, drum brake, and reversing gear.**  
**TWO BEAM CONDENSING ENGINES, each with cylinder 21 in. diameter, 4 ft. stroke, nozzles, side pipes, and double beat valves.**  
**ONE STEAM SHEARING MACHINE, with cylinder 8 in. diameter, 1 in. stroke, to cut bars up to 3 in. x 2 in. at 20 strokes per minute.**  
For further particulars and to view, apply—  
**THE COALBROOKDALE COMPANY (LIMITED), SHROPSHIRE.**

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**FOR SALE OR LEASE, on favourable terms, GOOD MICA MINES, partially developed, in Wyoming Territory. Samples shown.**  
Address, A. C. HENDRICKSON, 636, St. Mark's Avenue, Brooklyn, New York, U.S.A.

**MICHELL AND TREGONING'S PATENT PULVERISER.**  
**F. BARTLE AND CO., of BASSET FOUNDRY, CARN BREA, have much pleasure in announcing that they have become the PURCHASERS of an UNDIVIDED MOIETY of the ABOVE PATENT; and are, therefore, in a position to SUPPLY this FIRST-CLASS PULVERISER direct from their own Works at the shortest notice, and of guaranteed workmanship.**  
This Pulveriser has won several Medals, and has an unrivalled and increasing reputation for durability, cheapness, and dispatch.  
Further particulars on application.  
All descriptions of Mining Machinery for home and foreign parts.  
Faggotting, Smithery, and Fitting in all its Branches.

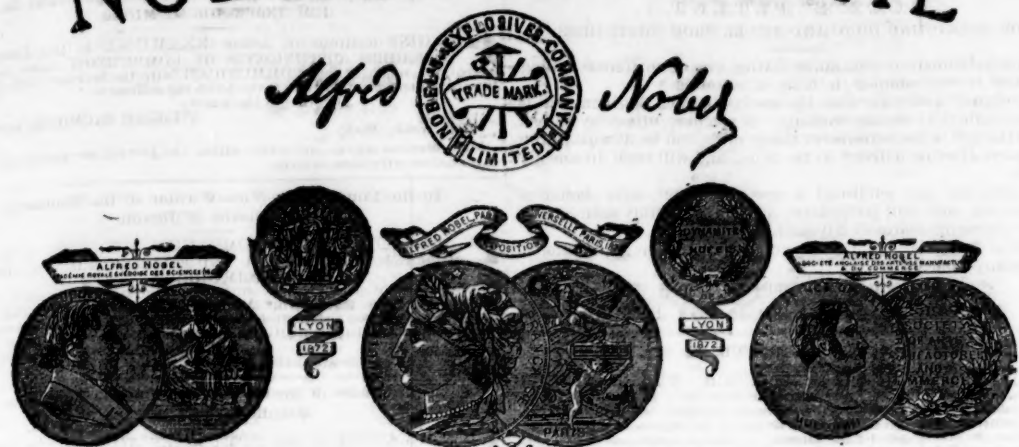
**FOR SALE:—**  
**ONE 50 inch and ONE 40 inch PUMPING ENGINES, with BOILERS and FITTINGS.**  
**ONE 22 inch ROTARY ENGINE.**  
**ONE 12½ inch HORIZONTAL ENGINE, with CAPSTAN and HAULING MACHINE attached.**  
All the above Engines are in first-class condition. Several WATER WHEELS, from 20 to 60 feet diameter. STAMPS AXLES and a large quantity of SECONDHAND MINING MATERIALS.  
Apply to—  
**J. AND H. PEARCE, TAVY IRONWORKS, TAVISTOCK.**

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**GLASGOW ROUTE VIA CRINAN AND CARNARON CANALS.** Royal Mail Steamer COLUMBIA, for IOWA, from GLASGOW daily at Seven A.M., in connection with the GREENOCK and Glasgow Railway, and from GREENOCK at Nine A.M., in connection with the Glasgow and South Western Railway, to STAFFA, IOWA, GLENCOE, ISLAY, STOROWAY, &c.  
Official Guide, 3d.; Illustrated, 6d. and is by post; or at W. H. Smith and Son's Railway Bookstalls.  
Time Bill, with Map and Fares, free from the Owner, DAVID MACBRATH, 115, Hope-street, Glasgow.



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Manufactured and sold by  
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Head Office: 149, West George Street, Glasgow.  
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Supplies may be obtained from any of the following District Agents of the Company in Great Britain:—  
HENRY KITCHIN and CO., 46, Lowther-street, Whitehaven.  
F. H. EDWARDS, Forth House, Newcastle-on-Tyne.  
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ALBERT RICKETTS, Dean-lane, Bedminster, Bristol.  
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TONITE is the most efficient and economical blasting agent ever invented, and is largely in demand. It does not contain any Nitro-glycerine, and is, therefore, exempt from the dangers of exudation, or of freezing and its attendant process of thawing.  
The Company manufacture

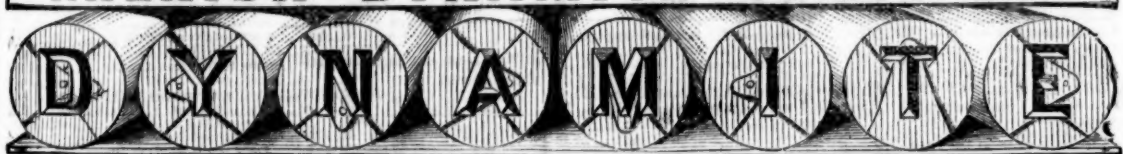
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of a quality much superior to the foreign article. Also supply Safety Fuse and Electric Firing Appliances of best description.  
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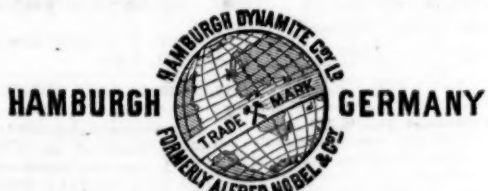


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IN GOOD CONDITION, AT MODERATE PRICES—viz.  
PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES,  
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The Pacific Water Jacket Smelters embrace many features that are entirely new and of great practical utility, which are secured by letters patent.

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More than One Hundred of them are now running in the various mining districts of the United States, giving results never before obtained as regards continuous running, economy of fuel grade and quality of bullion produced.

These Smelters are shipped in a complete state, requiring no brick or stone work, thus saving great expense and loss of time in construction.

Complete smelting plants made to order, with all the improvements that experience has proved valuable in this class of machinery. Skilled and experienced smelters furnished when desired to examine mines and to superintend constructing and running of furnaces. Estimates given upon application. Send for circular.

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SAFETY FUSE  
MANUFACTURER.



This manufacture embraces all the latest improvements for use in Blasting in Mines, Quarries, or for Submarine Purposes; and is adapted for exploding Gunpowder, Dynamite, or any other Explosive; and is made suitable for exportation to any part of the world. Price Lists and Sample Cards on application.

All communications to be addressed—  
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We are the exclusive owners of All the Mines producing the famous LEHIGH ZINC ORES of the Lehigh Valley, Penn., which are the Purest in the World, making a Soft, Ductile Spelter, Free of Lead and Arsenic, superior in all respects to any other made, and especially adapted for the manufacture of

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## THE MINING SHARE LIST.

## BRITISH DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pt.
12000 Bedford Unit., c. Tavis. (21 lib.)	0 14 0	1 1/4	1 1/4	0 1 0	0 1 0	May 1884
6000 Carn Brea, c. T. Illogan	13 2 11	3 3/4	3 3/4	0 1 0	0 1 0	Nov. 1881
4000 Craigant Bach, c. Cardigan	0 0 0	3 3/4	3 3/4	0 0 0	0 0 0	Nov. 1882
10240 Devon St. Consols, c. s. Tavistock	1 0 0	3 3/4	3 3/4	0 0 0	0 0 0	Dec. 1882
4700 Dolcoath, c. t. Camborne	10 14 10	7 3/4	7 3/4	39 18 0	1 10 0	Aug. 1884
6400 East Pool, c. t. Illogan	0 9 8	4 1/2	4 1/2	40 15 6	1 0 0	Aug. 1884
12000 Great Holway, c. t. Flintshire	5 0 0	4 1/2	4 1/2	0 12 0	0 7 6	Sept. 1883
15000 Great Lacey, c. t. Isle of Man	4 0 0	9 1/2	9 1/2	30 3 0	0 5 0	May 1884
6400 Green Hurth, c. t. Durham	0 0 0	4 1/2	4 1/2	4 18 0	0 5 0	July 1884
9300 Gunfildale (Glitters), c. t.	2 2 0	2 1/2	2 1/2	0 19 0	0 2 0	Mar. 1883
2800 Isle of Man, c. t. Isle of Man	25 0 0	3 1/2	3 1/2	83 5 0	0 1 0	Sept. 1880
8000 Killfirth, c. t. Chacewater	4 8 0	3 1/2	3 1/2	0 14 6	0 3 6	Nov. 1883
80000 Llandudno, c. t. Llandudno	6 0 0	1 1/2	1 1/2	1 5 0	0 3 6	Sept. 1883
400 Llanberris, c. t. Cardiganshire	18 15 0	1 1/2	1 1/2	0 15 0	0 10 0	June 1883
10000 Mellanar, c. t. Hayle	2 0 0	1 1/2	1 1/2	2 4 0	0 6 0	Jan. 1884
9000 Minera Mining Co., c. t. Wrexham	5 0 0	5 1/2	5 1/2	69 11 0	0 2 0	Feb. 1884
20000 Mining Co. of Ireland, c. t. c. s.	7 0 0	1 1/2	1 1/2	24 0 0	0 2 6	Jan. 1884
11829 North Hendre, c. t. Wales	2 10 0	1 1/2	1 1/2	3 18 0	0 4 0	Nov. 1882
8146 Ditto	1 5 0	1 1/2	1 1/2	0 11 3	0 2 0	Nov. 1882
12000 Phoenix United, c. t. Llanthorne	6 2 9	3 1/2	3 1/2	17 7 0	0 1 6	Apr. 1883
12000 Roman Gravel, c. t. Salop	7 10 0	3 1/2	3 1/2	9 11 0	0 5 0	May 1884
6123 South Condurrow, c. t. Camborne	2 0 0	3 1/2	3 1/2	11 8 0	0 7 0	Apr. 1884
9000 South Daren, c. t. Cardigan	1 10 3	2 1/2	2 1/2	0 4 0	0 2 0	Apr. 1880
8000 Tincroft, c. t. Pool, Illogan	14 2 0	6 1/2	6 1/2	51 3 6	0 6 0	Dec. 1881
15000 Van, c. t. Llanidloes	4 5 0	1 1/2	1 1/2	25 13 0	0 2 6	Jan. 1883
6000 West Basset, c. t. Illogan	7 10 4	3 1/2	3 1/2	28 3 0	0 6 0	Apr. 1882
6000 West Killy, c. t. St. Agnes	3 12 0	1 1/2	1 1/2	3 1 0	0 12 0	Apr. 1884
8000 Wheel Agar, c. t. Illogan	19 6 0	1 1/2	1 1/2	0 15 0	0 10 0	June 1884
12000 Wheel Crebor, c. t. Tavistock	2 4 0	1 1/2	1 1/2	5 2 0	0 2 6	Nov. 1883
1024 Wheel Elias Consols, c. t. Austell	18 0 0	1 1/2	1 1/2	5 2 0	0 10 0	Nov. 1883
8000 Wheel Grenville, c. t. Camborne	15 0 0	6 1/2	6 1/2	2 0 0	0 2 6	June 1884
4295 Wheel Kitty, c. t. St. Agnes	5 12 0	3 1/2	3 1/2	12 18 0	0 1 6	Jan. 1881
3000 Wheel Pevor, c. t. Redruth	13 13 6	3 1/2	3 1/2	8 13 6	0 4 0	Mar. 1881

## FOREIGN DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pt.
35500 Alamillos, c. t. Spain	2 0 0	1 1/2	1 1/2	2 15 0	0 2 0	Mar. 1884
30000 Almada and Tinto Consol., c. t.	1 0 0	5 1/2	5 1/2	0 6 3	0 1 0	May 1876
20000 Australian, c. t. South Australia	7 7 8	2 1/2	2 1/2	1 11 0	0 1 0	May 1884
15000 Birdseye Creek, c. t. California	4 0 0	3 1/2	3 1/2	1 7 0	0 2 0	June 1884
30000 Bratsberg, c. t. Norway	2 0 0	1 1/2	1 1/2	3 4 1/2	0 2 1/2	Mar. 1884
130000 California, c. t. Colorado	1 0 0	4 1/2	4 1/2	57 17 0	0 1 0	Aug. 1883
20000 Cape Copper Mining, c. t. South Africa	2 0 0	4 1/2	4 1/2	3 14 0	0 1 0	Aug. 1884
65000 Colorado United, c. t. Colorado	1 0 0	2 1/2	2 1/2	2 15 0	0 1 0	June 1884
50000 Copiapo, c. t. Chile	2 10 0	2 1/2	2 1/2	3 2 0	0 1 0	June 1884
70000 English and Australian, c. t. S. Aust.	2 10 0	2 1/2	2 1/2	3 2 0	0 1 0	Mar. 1884
2000 Eng.-Aus., c. t. Viet. pref. (20000 o.)	1 0 0	2 1/2	2 1/2	0 3 0	0 3 0	Mar. 1882
25000 Fortuna, c. t. Spain	2 0 0	3 1/2	3 1/2	8 11 5	0 3 0	Mar. 1884
72000 Frontino and Bolivia, c. t. New Gran.	1 0 0	3 1/2	3 1/2	0 12 0	0 1 0	Dec. 1883
400000 La Plata, c. t. Leadville	1 0 0	3 1/2	3 1/2	0 6 0	0 7 1/2	Oct. 1882
5000 Linars, c. t. Spain	3 0 0	3 1/2	3 1/2	19 10 4	0 3 0	Mar. 1884
20000 Marbella Iron Ore, c. t. Spain	10 0 0	2 1/2	2 1/2	0 10 0	0 10 0	June 1882
185184 Mason and Barry, c. t. Portugal	10 0 0	10 1/2	10 1/2	3 15 0	0 15 0	Apr. 1884
80659 Quebrada, c. t. Land and Cop. Venezuela	10 0 0	3 1/2	3 1/2	6 per cent.	0 0 0	1882
50000 Panuillo, c. t. Chile	4 0 0	4 1/2	4 1/2	2 0 9	0 2 0	May 1884
25000 Pitanguy, c. t. Brazil (in 60000 #1 pd.)	0 10 0	0 0 0	0 0 0	0 1 0	0 1 0	Sept. 1880
1400 Pitoubaud, c. t. France	20 0 0	8 1/2	8 1/2	30 3 1	0 11 3	Dec. 1883
100000 Port Phillip, c. t. Omeas (23 shares)	1 0 0	4 1/2	4 1/2	14 2 0	0 10 0	July 1881
50000 Rara Fortuna, c. t. Argent. Republic	1 0 0	0 0 0	0 0 0	3 0 0	0 1 0	Feb. 1882
54000 Richmond Consol., c. t. Nevada	5 0 0	3 1/2	3 1/2	14 5 0	0 5 0	Aug. 1883
24532 Rio Tinto, c. t. Mortgage Bds. Huelva	100 0 0	10 1/2	10 1/2	5 per cent.	0 0 0	Apr. 1884
35000 Ditto, shares	10 0 0	18 1/2	18 1/2	0 12 0	0 1 0	May 1882
40000 Santa Barbara, c. t. Brazil	0 10 0	0 0 0	0 0 0	0 12 0	0 1 0	June 1882
12000 Schwab Gully, c. t. Kimberley	10 0 0	8 1/2	8 1/2	6 2 0	0 10 0	June 1884
120000 Scottish-Australian Mining Co. t.	1 0 0	2 1/2	2 1/2	20 p. cent.	0 2 0	Apr. 1884
80000 Ditto, New	0 10 0	1 1/2	1 1/2	20 p. cent.	0 1 0	Apr. 1884
22500 Sierra Buttes, c. t. California	2 0 0	1 1/2	1 1/2	2 6 0	0 6 0	Apr. 1884
40625 Ditto, Pumas Eureka	2 0 0	1 1/2	1 1/2	3 2 0	0 2 0	Apr. 1884
253000 St. John del Rey (25 Stock and multiple deal in)	65 75	5 p. cent.	5 p. cent.	0 6 0	0 6 0	Aug. 1882
160000 Tambora, c. t. W. W. W. W. W.	1 0 0	0 0 0	0 0 0	0 6 0	0 6 0	Aug. 1882
625000 Tharsis, c. t. Spain (58730 issued)	2 0 0	7 1/2	7 1/2	5 12 4	0 5 10	Sept. 1884
14000 Tolima, c. t. Colombia (A shares)	5 0 0	5 1/2	5 1/2	5 12 4	0 5 10	Sept. 1884
6000 Ditto (B shares)	5 0 0	5 1/2	5 1/2	5 12 4	0 5 10	Sept. 1884
25000 Victoria (London), c. t. Australia	1 0 0	0 0 0	0 0 0	0 13 10	0 8 0	Feb. 1881
124221 United Mexican, c. t. Mexico	9 17 6	3 1/2	3 1/2	0 2 0	0 2 0	Mar. 1884
100000 Victorine (Nevada, U.S.) Deb. Bds.	1 0 0	0 0 0	0 0 0	0 2 0	0 2 0	June 1882
15000 Western Andes, c. t. U.S.	5 0 0	5 1/2	5 1/2	4 16 3	0 10 0	Aug. 1884
2100 W. Prussian (5500 pref. sh. £10 pd.)	10 0 0	0 0 0	0 0 0	4 2 0	0 3 0	Apr. 1881
54800 Yorke Pen., c. t. South Aust. Pref.	1 0 0	0 0 0	0 0 0	0 3 0	0 3 0	Mar. 1882

\* Have made calls since last dividend was paid.

## NON-DIVIDEND BRITISH MINES.

Shares.	Paid.	Last wk.	Clos. pr.
25000 Aberduna, c. t. Denbigh	1 10 0	0 0 0	3 1/2
12000 Anderton, c. t. c. Devonshire	1 2 0	0 0 0	3 1/2
12000 Assheton, c. t. Carnarvonshire	5 0 0	0 0 0	3 1/2
3270 Blue Hills, c. t. St. Agnes	4 8 0	3 1/2	3 1/2
10000 Brada, c. t. Isle of Man	1 0 0	0 0 0	3 1/2
30000 British, c. t. Wrexham	1 0 0	0 0 0	3 1/2
20000 British Manganese Company	1 0 0	0 0 0	3 1/2
20000 Bwch United, c. t. Cardigan	1 0 0	0 0 0	3 1/2
12000 Collaenbe Consols, c. t. Llanrwst	0 2 0	0 0 0	3 1/2
50000 Carn Camborne, c. t. c. Camborne	1 0 0	0 0 0	3 1/2
37500 Carnarvonshire Consol., c. t. Llanrwst	2 0 0	0 0 0	3 1/2
6400 Cashwell, c. t. Llanrwst	2 10 0	1 1/2	1 1/2
6000 Cathedral, c. t. Gwynedd	1 12 0	0 0 0	3 1/2
20000 Central Foxdale, c. t. Isle of Man	1 17 6	0 0 0	3 1/2
49500 Coed-y-Fedw Pant-y-Buarth, c. t.	1 0 0	1 1/2	1 1/2
2450 Cook's Kitchen, c. t. Illogan	35 14 9	9 8 1/2	9 8 1/2
50000 Crooktop, c. t. Denbighshire	0 17 0	0 0 0	3 1/2
38400 Crook Burn, c. t. Cumberland	0 17 0	0 0 0	3 1/2
48725 D'Eresby Mountain, c. t. Llanrwst	0 10 0	3 1/2	3 1/2
12000 Derwent, c. t. Durham	4 0 0	0 0 0	3 1/2
60000 Devon Friendship, c. t. s. Tavistock	1 0 0	3 1/2	3 1/2
12000 Devon Great United (21 shares)	1 17 6	0 0 0	3 1/2
50000 Drakewell, c. t. c. Calstock	0 15 0	0 0 0	3 1/2
50000 Duchy Peru, c. t. c. Cornwall	1 0 0	1 1/2	1 1/2
12000 East Blue Hills, c. t. St. Agnes	0 5 0	3 1/2	3 1/2
6000 East Botalack, c. t. St. Just	1 2 0	3 1/2	3 1/2
1144 East Botalack, c. t. St. Just	5 2 6	3 1/2	3 1/2
30000 E. Craven Moor, c. t. Pateley Bridge	1 0 0	0 0 0	3 1/2
15000 East Devon Consol., c. t. Buckfastleigh	2 0 0	3 1/2	3 1/2
20000 East Long Rake, c. t. Wales	1 0 0	3 1/2	3 1/2
25500 East Roman Gravel, c. t. Salop	1 0 0	3 1/2	3 1/2
18000 East Van, c. t. Llanidloes	5 0 0	0 0 0	3 1/2
2048 East Wheel Lovell, c. t. Helston	20 3 6	3 1/2	3 1/2
100000 East Wheel Rose, c. t. s. Newlyn East	1 0 0	3 1/2	3 1/2
25000 Ecton, c. t. c. Wetton	1 0 0	1 1/2	1 1/2
12500 Frongoch, c. t. Cardigan (11000 sh. iss.)	2 0 0	3 1/2	3 1/2
12000 Gawn, c. t. Tavistock	2 5 0	3 1/2	3 1/2
40000 Glas. Car. (30000 sh. 41 pd.)	15 1/2	3 1/2	3 1/2
30000 Gobbett, c. t. Devon	1 0 0	3 1/2	3 1/2
10000 Goddards, c. t. c. Carnarvon	1 0 0	0 0 0	3 1/2
32000 Goginan, c. t. Cardiganshire	1 0 0	3 1/2	3 1/2
25000 Goodere, c. t. St. Cleer	1 0 0	3 1/2	3 1/2
8500 Gorseid and Merilyn Consol., c. t. Flint.	2 10 0	3 1/2	3 1/2
6250 Great West Olverton, c. t. St. Agnes	0 6 0	3 1/2	3 1/2
50000 Great W. Shepherds, c. t. Cornwall	1 0 0	0 0 0	3 1/2
20000 Grogwin, c. t. Cardigan	1 0 0	0 0 0	3 1/2
10000 Gwyn-y-Mynydd, c. t. Llanrwst	4 0 0	1 1/2	1 1/2
70000 Gwyn-y-Mynydd, c. t. Llanrwst	1 0 0	0 0 0	3 1/2
12000 Hardships, c. t. Westmore. (10s. sh.)	0 2 0	3 1/2	3 1/2
12000 Herodafon, c. t. near Liskeard	1 0 0	3 1/2	3 1/2
18000 Hingston Down, c. t. Calstock	0 13 0	3 1/2	3 1/2
35000 Holway Consols, c. t. Flintshire	1 0 0	0 0 0	3 1/2
25000 Kit Hill Gt. Cons. c. t. s. m. (21 sh.)	1 2 0	3 1/2	3 1/2
15000 Lady Ann, c. t. Llanarmon	1 0 0	0 0 0	3 1/2
15000 Llandegla, c. t. Wales	1 0 0	0 0 0	3 1/2
5120 Levell, c. t. Wendron	1 8 0	3 1/2	3 1/2
9000 Marke Valley, c. t. Llanthorne	7 14 6	3 1/2	3 1/2
8000 Mona, c. t. Anglesea	5 0 0	0 0 0	3 1/2
20000 Mona Consols, c. t. Anglesea	1 0 0	0 0 0	3 1/2
20000 Mostyn Consols, c. t. Flint	1 0 0	0 0 0	3 1/2
12000 Moria Du, c. t. s. Anglesea	1 0 0	0 0 0	3 1/2
80000 Mounts Bay, c. t. Breage	1 0 0	3 1/2	3 1/2
5144 Mount Carbis, c. t. c. Redruth	1 15 0	0 0 0	3 1/2
12000 New Caradon, c. t. St. Cleer	0 6 0	3 1/2	3 1/2
2400 New Cook's Kitchen, c. t. Illogan	10 5 6	1 1/2	1 1/2
8500 New Dolcoath, c. t. c. Camborne	3 0 0	0 0 0	3 1/2
10000 New Holmbush, c. t. c. Callington	3 0 0	0 0 0	3 1/2
8000 New Kitty, c. t. St. Agnes	1 0 0	1 1/2	1 1/2
25000 New Langford, c. t. c. Callington	2 0 0	3 1/2	3 1/2
15000 New Redmoor, c. t. var. Callington	1 5 0	0 0 0	3 1/2
17500 New Terras, c. t. St. Austell	2 0 0	3 1/2	3 1/2
3500 New Tincroft, c. t. Lelant	6 0 0	0 0 0	3 1/2
12000 New Trumpet, c. t. Wendron	1 0 0	1 1/2	1 1/2
30000 New Van Cons. & Glyn, c. t.	7 0 0	0 0 0	3 1/2
30000 New West Caradon, c. t. Liskeard	0 7 0	0 0 0	3 1/2
12000 New Wheel Pevor, c. t. Redruth	0 10 0	0 0 0	3 1/2
12000 North Blue Hills, c. t. St. Agnes	0 2 0	1 1/2	1 1/2
5228 North Busy, c. t. c. Scourie	4 3 0	1 1/2	1 1/2
10009 N. D'Eresby Mount, c. t. Llanrwst	1 0 0	0 0 0	3 1/2
25000 North Goginan, c. t. Cardiganshire	1 0 0	0 0 0	3 1/2
6400 North Green Hurth, c. t.	1 0 0	1 1/2	1 1/2
25000 North Grogwin, c. t. Llanthorne	1 0 0	3 1/2	3 1/2

## NON-DIVIDEND MINES—continued.

Shares.	Paid.	Last wk.
12000 North Herodafon, <i>i</i> , Liskeard	0 13 6	0 0 0
2000 North Levant, <i>t</i> , <i>c</i> , St. Just	13 18 0	0 0 0
50000 North Molton, <i>c</i> , <i>m</i> , <i>t</i> , Devon	1 0 0	0 0 0
2326 North Treskerry, <i>c</i> , St. Agnes	1 0 0	0 0 0
5000 Northern, <i>s</i> , <i>i</i> , Durham	8 17 10	0 0 0
40000 Okel Tor, <i>t</i> , <i>c</i> , <i>a</i> , Calstock	1 0 0	0 0 0
20000 Old Shepherds, <i>i</i> , Cornwall	1 0 0	0 0 0
60000 Owen Ven & Tregur, <i>t</i> , <i>c</i> , Marazion	1 0 0	0 0 0
45000 Parys Corporation, <i>c</i> , <i>a</i> , Anglesea	1 0 0	0 0 0
7500 Pateley Bridge, <i>i</i> , Yorkshire	1 0 0	0 0 0
5000 Pedn-an-dren, <i>t</i> , Redruth	4 10 2	0 0 0
5000 Penn-ar-ha, <i>i</i> , bar, North Wales	5 0 0	0 0 0
15000 Pen-y-Dreghan, <i>i</i> , Carmarthenshire	1 0 0	0 0 0
2000 Pen-y-Dreghan, <i>i</i> , Piltshire	1 0 0	0 0 0
10000 Polberro, <i>t</i> , St. Agnes	0 2 0	0 0 0
5000 Polcrao, <i>t</i> , Crowan	0 2 0	0 0 0
10000 Port Nigel Syn, <i>s</i> , <i>i</i> , Carnar, (4000 ls.)	0 18 0	0 0 0
12000 Pr. Patrick, <i>s</i> , <i>i</i> , (als. 12000 pf. 10 p.c.)	0 15 0	0 0 0
12000 Prince of Wales, <i>s</i> , <i>c</i> , <i>a</i> , Calstock	1 19 0	0 0 0
36000 Russell United, <i>c</i> , <i>a</i> , Tavistock	0 19 0	0 0 0
50000 Silver Hill, <i>s</i> , Callington	1 0 0	0 0 0
30000 Sincilar, <i>s</i> , <i>i</i> , Whitford	1 0 0	0 0 0
40000 Sordridge, <i>c</i> , <i>a</i> , Horrabridge	1 0 0	0 0 0
50000 South Oarodon, <i>s</i> , <i>c</i> , St. Cleer	1 0 0	0 0 0
5000 South Carbis, <i>t</i> , <i>c</i> , Redruth	0 10 0	0 0 0
42000 So. Devon Unit, <i>s</i> , <i>c</i> , Buckfastleigh	1 0 0	0 0 0
3000 South Doleath, <i>c</i> , <i>t</i> , Illogan	0 19 0	0 0 0
5000 South Kitty, <i>t</i> , <i>c</i> , Agnes	0 10 0	0 0 0
5000 South Penryn, <i>s</i> , <i>i</i> , Carnap	3 18 6	0 0 0
30000 So. Phoenix & Oarodon, <i>s</i> , <i>c</i> , Linkinhorne	5 11 0	0 0 0
5000 South Tolcarne, <i>t</i> , <i>c</i> , Camborne	7 4 6	0 0 0
2043 South Wheal Crofty, <i>c</i> , Illogan	9 19 4	0 0 0
5000 South Wheal Frances, <i>t</i> , Illogan	1 0 0	0 0 0
30000 Standard, <i>s</i> , <i>i</i> , Bala, Llanrwst	1 0 0	0 0 0
40000 Tamar, <i>s</i> , <i>i</i> , Bealston	1 0 0	0 0 0
12000 Trebartha Lemaner, <i>t</i> , Northill	0 6 3	0 0 0
5000 Tregembo, <i>t</i> , <i>c</i> , Cornwall	4 0 0	0 0 0
50000 Tregreontes and Old Polgooth Con.	1 0 0	0 0 0
50000 Tressavan, <i>s</i> , <i>t</i> , <i>c</i> , Gwennap	1 0 0	0 0 0
5000 Trevaunance, <i>t</i> , St. Agnes	0 8 0	0 0 0
1000 Vaughan, <i>s</i> , <i>i</i> , Cardiganshire	10 0 0	0 0 0
50000 Wardale, <i>s</i> , <i>i</i> , Northumber. (41. share)	1 5 0	0 0 0
12000 West Assinall, <i>i</i> , Carnarvon	1 0 0	0 0 0
12000 West Caradon, <i>c</i> , St. Cleer	0 9 3	0 0 0
3000 West Craven Moor, <i>i</i> , Pateley Bridge	10 0 0	0 0 0
12000 West Crebhor, <i>c</i> , Tavistock	0 11 6	0 0 0
10240 West Devon Consols, <i>c</i> , Calstock	1 2 6	0 0 0
10000 West Godolphin, <i>t</i> , <i>c</i> , Breaage	1 3 6	0 0 0
12000 West Gonamena, <i>c</i> , St. Cleer	0 1 0	0 0 0
15000 West Holway, <i>s</i> , <i>i</i> , Piltshire	1 0 0	0 0 0
50000 West Isburne, <i>s</i> , <i>i</i> , Cardigan	1 0 0	0 0 0
5000 West Mar 3000, <i>s</i> , <i>i</i> , Mehenlot	1 13 0	0 0 0
20000 W. Pateley Bridge, <i>i</i> , Cornwall	1 0 0	0 0 0
10000 West Phenix, <i>t</i> , Linkinhorne	0 5 0	0 0 0
5000 West Polbreen, <i>t</i> , <i>c</i> , St. Agnes	0 6 0	0 0 0
5190 West Polidice, St. Day	7 10 0	0 0 0
6144 West Wheal Frances, <i>t</i> , Illogan	14 19 1	0 0 0
3000 West Wheal Peavor, <i>t</i> , Redruth	4 0 10	0 0 0
2400 West Wheal Seton, <i>c</i> , Camborne	20 0 0	0 0 0
6144 Wheal Bassett, <i>c</i> , Illogan	9 9 6	0 0 0
3000 Wheal Bonty, <i>t</i> , <i>c</i> , Latchley	5 0 0	0 0 0
3000 Wheal Boys, <i>t</i> , Redruth	1 3 6	0 0 0
10000 Wheal Castle, <i>s</i> , <i>t</i> , St. Just	0 0 0	0 0 0
2000 Wheal Coates, <i>t</i> , St. Agnes	0 11 0	0 0 0
2585 W. Comf., & No. Tres, <i>s</i> , <i>c</i> , Gwennap	1 0 0	0 0 0
5000 Wheal Elizabeth, <i>s</i> , <i>c</i> , Cornwall	1 0 0	0 0 0
2238 Wheal Jane, <i>t</i> , Kea	3 0 0	0 0 0
2000 Wheal Jewell, <i>c</i> , St. Hilary	1 0 6	0 0 0
2000 Wheal Lusk, <i>t</i> , Callington	0 3 9	0 0 0
2000 Wheal Lowen, <i>t</i> , St. Just	7 3 0	0 0 0
5000 Wh. Silver Lanteglos, <i>s</i> , <i>c</i> , Cameford	1 0 0	0 0 0
10000 Wheal Sisters, <i>t</i> , Lelant	4 2 6	0 0 0
4098 Wheal Uny, <i>t</i> , <i>c</i> , Redruth	20 0 0	0 0 0
1865 Wye Valley, <i>i</i> , Montgomery	1 0 0	0 0 0
5000 Yealand Consols, <i>c</i> , Devonshire	0 12 6	0 0 0
4000 Ystwith, <i>s</i> , <i>i</i> , Cardigan	1 0 0	0 0 0

*M*, blende; *c*, copper; *g*, gold; *i*, lead; *s*, silver; *s*, *s*, silver-lead; *t*, tin; *a*, zinc; *t*, iron; *a*, arsenic; *d*, diamond.

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